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MOTOR AGE

Motor Age's Review of Road Racing

By C. G. Sinsabaugh

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FOLLOWING the custom it inaugurated 3 years ago, Motor Age herewith reviews the 1911 road racing season and picks a champion driver and the make of car which, in its judgment, based upon the figures compiled, has done the best work of the year, which has been one of the most active in the history of American motoring.

To select the most successful make of car is a comparatively easy task, for none can question the right of the National to the honor; but in naming Harvey Herrick as the champion driver of the year Motor Age has had to weigh the pros and cons of the situation most carefully, for the irrepressible Hughie Hughes has been a most formidable candidate for the honors which have been awarded to the new star from the Pacific coast, while Charles C. Merz was a big factor.

When the picking was made in 1909 the driving championship was given to Bert Dingley, also a Californian, who won two firsts, three seconds and one third in seven starts, while the Chalmers was adjudged car champion through having won five firsts, three seconds and two thirds out of twenty-two starts. In 1910 the picking was Ralph Mulford and the Lozier car, Mulford having won two firsts and one second in five starts, finishing in all five. The Lozier car started eight times, won five of the eight and was second once.

The record made by the National in 1911 was nothing short of phenomenal. Of the twenty-seven road races run during the season the National took part in twelve of them and the returns show that it won nine firsts, three seconds and two thirds. Eight times National cars were unplaced but only thrice did the big blue cars fail to finish. It started in

RECORD OF CARS

Car	Start	First	Second	Third	Unplaced
Abbott-Detroit.	8	1	0	1	6
Alco	3	0	1	0	2
Benz	5	2	1	0	2
Buick	7	2	0	0	5
Chalmers	1	0	1	0	0
Cole	8	1	1	0	6
Cino	6	0	0	1	5
Colby	5	0	0	1	4
E-M-F	5	1	1	2	1
Fiat	10	2	0	0	8
Ford	6	1	2	2	1
Franklin	2	0	1	0	1
Lozier	8	2	1	1	4
Marmon	11	1	3	2	5
Maxwell	2	0	1	0	1
Mercedes	8	0	1	2	5
Mercer	16	4	1	3	8
Midland	2	0	0	1	1
National	21	9	3	2	7
Oakland	1	0	1	0	0
Ohio	8	0	1	0	7
Pope	10	1	3	1	5
Stutz	5	0	1	1	3
Westcott	1	0	0	1	0

Unplaced: Apperson, 2; Amplex, 2; Case, 2; Corbin, 1; Durocar, 1; Everitt, 1; Flanders, 1; Haynes, 1; Inter-State, 2; Jackson, 2; Lexington, 1; Locomobile, 1; Reo, 1; Regal, 1; Simplex, 2; Staver, 2; Schacht, 3; Sunset, 1; Velie, 2; Warren-Detroit, 2

twelve of the fifteen races to which it was eligible, winning nine of them. Added to all this is the fact that the National is holder of the world's record, which it smashed twice in a day and which mark has stood the attacks of others on the magnificent course at Savannah.

The National's Record

The winnings of the National include the capture of the national stock chassis championship as exemplified by the Elgin National trophy race put on by the Chicago Motor Club. The famous desert road race from Los Angeles to Phoenix went to a National, while in the Fairmount Park road race at Philadelphia the National won its class. It won the Ferris cup at Santa Monica and with it went the world's record. It captured the Bakersfield, Cal., road race, the 301-600 class at Oakland, Cal., the Illinois cup at Elgin, the Sable cup at Denver and the 301-450 class at Santa Monica.

The three times the National failed to finish were at Oakland and at Elgin. In the former meet Ralph de Palma in the 301-600 class lost several of the cap-screws out of his crankcase, losing the oil, which caused one of the camshaft bearings to become hot and eventually burn out. Wilcox failed to finish in the free-for-all at the same meet. At Elgin Johnny Aitken was forced out of the Elgin National because of a sand hole in a cylinder casting which did not begin to leak until the motor became very hot, which made the small hole open up and cause the motor to pop and snap.

One reaches some interesting statistics in the National speed department, for the figures show that the nineteen Nationals that finished had a grand average of 61.67 miles per hour. Of these marks there were five that were better than 70 miles an hour, the crowning glory being Herrick's 74.62 miles an hour. Merz' 74.42 miles per hour was a record for a few hours. The extreme of this is the 27.03 miles per hour made by Herrick in the desert race from Los Angeles to Phoenix.

DAVID BRUCE-BROWN

New Yorker whose sensational victory in the grand prix, which he won for the second time, puts him in front ranks of American drivers. He also started in the Vanderbilt, in which he failed to finish

STATISTICS OF 1909-1910-1911

	1911	1910	1909
Number of road races	27	21	27
Number of miles	5591	4449	5100
Average distance of each race	206	211	211
Average miles per hour each winner	63.22	53.8	49.2
Average each car that finished	59.51	51.58	50.62
Fastest road race	74.62	73.22	69.9
Slowest road race	27.03	26.41	24.8
Number of starters	202	206	223
Average number of starters	7½	9½	8¼
Number of cars allowed to finish	92	82	94

HUGH HUGHES

Hughes' victories in 1911 included three firsts in class road races and in addition he ran third in the Elgin National in a car of comparatively low power. Hughes must be considered as one of the three best American drivers of the year

Work of Mercer and Lozier

Two other makes of cars can be given most serious consideration in this summing up of the year's work—the Mercer and the Lozier. In fact, the former is a most worthy runner-up to the National and in other years would have been a contender for the championship. The Mercer started sixteen cars in eleven road races and the returns give it four firsts, one second and one third. Its four victories were scored in class events and three of the four were won by Hughes—the Kane County at Elgin, the Savannah challenge cup at Savannah and the 231-300 class at Philadelphia. The fourth first was captured by Bigelow at Oakland. In both the Kane County and at Savannah the Mercer had the warmest kind of competition. At Elgin it met and defeated the Colby, Corbin, Cole, Staver, and Cino and at Savannah the Marmon and Case had to be disposed of. Undoubtedly the Mercer's best work of the year was in the Elgin National in which Hughes went out of his class and ran third to Zengel in the National and Grant in the Alco, losing second place only by 11 seconds and beating such big cars as two other Alcos, a National, Lozier, two Simplexes and a Pope-Hartford.

The champion of 1910, the Lozier, com-

RALPH MULFORD

The champion of 1910 started four times in 1911—at Elgin, Philadelphia and at Savannah. He won the Vanderbilt cup and in the grand prix was a contender with Bruce-Brown and Hearne up to within two laps of the finish

peted at Elgin, Philadelphia and Savannah in 1911, a total of eight starts which returned two firsts, one second and a third. At Elgin Mulford had all the earmarks of being a winner until he burned out a connecting rod bearing. The next appearance of the Lozier was in the Fairmount Park road race in which Mulford and Grant, who joined the Lozier team after the Alco withdrew from racing, competed. Mulford won his class and was second in the sweepstakes. Grant was fifth in the sweepstakes and third in his class. At Savannah the two started in the Vanderbilt, Mulford being returned the winner and Grant finishing fourth. In the grand prix Mulford put up a most remarkable fight for twenty-two of the twenty-four laps when the gearset shaft which extends through the forward end of the gearbox and connects with the clutch through a universal shaft, snapped as the Lozier hit a street car track.

Marmon on the Road

The Marmon did not go into road racing until the fall when it competed at Santa Monica and Savannah. It started eleven cars and annexed one first, three seconds and two thirds, one of the seconds being the position of runner-up to Herrick in the record-breaking race at Santa Monica, Patschke being beaten only by a shade over 3 minutes and with an average of 73.4 miles per hour.

So much for the cars. As for the drivers there was none who had such a commanding lead as did the National among the cars. Harvey Herrick of the National team and Hugh Hughes of the Mercer, however, seem to be the two entitled to recognition in picking the man who did the best driving. Mulford, Bruce-Brown and Merz are very much in the limelight but none has been so successful as Herrick and Hughes. It was the world's record and the keenness of the competition Herrick had to meet that causes the writer to name him as champion. The Californian started four times during the season and won three times. He captured the Santa Monica free-for-all at a world's record clip; he won the

STARTING AND FINISHING

Race	Distance	No. Starters	No. Finishers
Grand Prix	411.36	16	6
Vanderbilt	291.38	14	6
Elgin National	302.5	10	3
Ferris Cup	202	12	5
Fairmount Park	202.5	16	9
Oakland Free-for-all	163.9	5	2
Cincinnati	200	10	5
Illinois	203	4	2
Hamilton County	150	8	4
Bakersfield Free-for-all	126.1	4	1
Sable Cup	200	2	1
601-750, Philadelphia	202.5	2	1
451-600, Philadelphia	202.5	5	4
Savannah	222.82	7	3
Kane County	169.5	11	7
301-600, Oakland	152.9	6	4
Up to 300, Oakland	98.3	5	1
Aurora	135	3	3
Tiedeman	171.4	6	4
301-450, Santa Monica	151.5	4	4
231-300, Santa Monica	151.5	9	4
Under 231, Santa Monica	101	9	4
Light-car, Bakersfield	100.3	7	3
301-450, Philadelphia	202.5	3	3
231-300, Philadelphia	202.5	6	1
Desert race	551	16	4
Light-car, Denver	200	6	1

EDWARD A. HEARNE

Runner-up in the grand prix and leader of race for nineteen of twenty-four laps. Winner of the Cincinnati road race. A veteran although a youngster, and certainly entitled to rank among the best of the season

RECORD OF DRIVERS

Driver	Start	First	Second	Third	Unplaced
Anderson	3	0	1	0	2
Aurandt	1	0	0	1	0
Barnes	2	0	1	0	1
Bergdoll	3	2	0	0	1
Bigelow	3	1	0	0	2
Bruce-Brown	2	1	0	0	1
Carrigan	1	0	0	1	0
Charles	1	0	1	0	0
Cooper	1	0	1	0	0
Dawson	1	0	0	1	0
De Palma	6	0	1	1	4
Dingley	5	1	3	0	1
Disbrow	5	1	0	0	4
Evans	1	0	1	0	0
Fleming	2	0	0	1	1
Gilchrist	2	0	0	1	1
Grant	4	0	1	1	2
Hamlin	1	0	1	0	0
Hanshue	5	0	0	1	4
Hearne	2	1	1	0	0
Heinemann	1	0	1	0	0
Herr	3	1	0	1	1
Herrick	4	3	0	0	1
Hughes	6	3	0	1	2
Jenkins	5	1	1	0	3
Keene	1	1	0	0	0
Kulick	2	0	1	0	1
Lewis	1	0	0	1	0
Merz	5	2	2	0	1
Mulford	5	2	1	0	2
McMillan	1	1	0	0	0
McDonald	1	0	1	0	0
L. Nikrent	4	2	0	0	2
J. Nikrent	3	0	1	1	1
Packer	1	0	0	1	0
Patschke	3	0	1	0	2
Pearce	2	0	0	1	1
Robbins	1	0	0	1	0
Roberts	2	1	0	0	1
Siebel	1	0	0	1	0
Siefert	3	0	0	1	2
Thatcher	2	0	1	0	1
Thorney	1	1	0	0	1
Tower	1	0	0	1	0
Weathers	1	0	1	0	0
Witt	1	1	0	0	0
Wishart	4	0	0	1	3
Zengel	3	1	1	1	0

Unplaced: Aitken, 1; Armstrong, 1; Anthony, 1; Buck, 1; Burt, 2; Ball, 1; Borusch, 1; C. Basle, 3; Betz, 2; Bramlette, 1; Brong, 1; Burman, 2; Buckley, 1; Bragg, 1; Cobe, 2; Duby, 1; W. Endicott, 1; Fetcher, 1; V. Fleming, 1; Ferguson, 1; Hartman, 2; Hemery, 1; Jeffkins, 4; Jackson, 1; Jagersberger, 2; Knight, 1; Knipper, 1; Lee, 1; La Casse, 1; Limberg, 2; Maisonville, 1; Morris, 1; Monckmeier, 1; Mathews, 4; Michener, 1; Mustain, 1; McKeague, 1; Mitchell, 2; Matson, 1; Ogren, 1; O'Brien, 1; Parker, 3; Ralmey, 3; Robillard, 1; Stickney, 1; G. Soules, 2; Smith, 2; Stearns, 1; Turner, 2; Tetzlaff, 2; Tremaine, 1; Wallace, 2; Wilcox, 2; Wagner, 1

AVERAGES MADE BY ALL CARS FINISHING IN TWENTY-SEVEN AMERICAN ROAD RACES IN 1911

M.P.H.	Car	Driver	Race
74.62	National	Herrick	Santa Monica
74.45	Fiat	Bruce-Brown	Grand Prix
74.42	National	Merz	Santa Monica
74.07	Lozier	Mulford	Vanderbilt
73.99	Benz	Hearne	Grand Prix
73.64	Pope-Hartford	Dingley	Santa Monica
73.39	Mercedes	De Palma	Vanderbilt
73.25	Mercedes	De Palma	Grand Prix
73.24	Marmon	Patschke	Santa Monica
72.18	Stutz	Lewis	Santa Monica
72.16	Marmon	Dawson	Santa Monica
72.14	National	Herrick	Santa Monica
71.54	National	Merz	Santa Monica
70.97	Mercedes	Wishart	Vanderbilt
70.93	National	Wilcox	Santa Monica
70.10	Fiat	Bragg	Grand Prix
69.82	Lozier	Grant	Vanderbilt
68.78	Marmon	Keene	Santa Monica
68.71	Fiat	Parker	Vanderbilt
68.34	Mercer	Hughes	Savannah
68.32	Marmon	J. Nikrent	Santa Monica
67.99	Mercer	Hanshue	Santa Monica
67.49	Pope Hummer	Disbrow	Vanderbilt
66.80	National	Merz	Oakland-Panama
66.50	Pope-Hartford	Dingley	Oakland-Panama
66.38	National	Zengel	Elgin National
66.28	Marmon	Heinemann	Savannah
65.90	Pope-Hartford	Dingley	Oakland-Panama
65.80	Pope-Hartford	Fleming	Oakland-Panama
65.63	National	Herr	Illinois cup
65.57	Mercer	Hughes	Elgin National
65.57	National	Merz	Illinois cup
65.30	Marmon	J. Nikrent	Savannah
64.90	Alco six	Grant	Elgin National
64.61	Mercer	Hughes	Kane County
64.60	National	Merz	Oakland-Panama
63.86	Pope Hummer	Disbrow	Grand Prix
63.50	Mercer	Barnes	Kane County
62.67	Abbott-Detroit	Mitchell	Grand Prix
61.20	Benz	Bergdoll	Philadelphia
61.14	Benz	Bergdoll	Philadelphia
60.70	Mercedes	Wishart	Philadelphia
60.70	Mercedes	Wishart	Philadelphia
60.48	Lozier	Mulford	Philadelphia
60.19	Colby	Pearce	Kane County
60.18	Lozier	Mulford	Philadelphia
59.60	Cole	Jenkins	Kane County
59.20	Buick	L. Nikrent	Santa Monica
59.10	National	Zengel	Philadelphia
59.10	National	Zengel	Philadelphia
58.30	National	Disbrow	Philadelphia
58.20	Lozier	Grant	Philadelphia
58.20	Lozier	Grant	Philadelphia
58.20	National	Disbrow	Philadelphia
58.00	Mercer	Hughes	Philadelphia
57.91	Mercer	Hughes	Philadelphia
57.35	E-M-F	Witt	Tiedeman
57.30	Mercer	Bigelow	Oakland-Panama
57.21	Ford	Charles	Santa Monica
57.06	E-M-F	Evans	Tiedeman
56.68	Fiat	Hearne	Cincinnati
56.64	E-M-F	Tower	Tiedeman
56.46	Corbin	Maisonville	Kane County
56.32	Cole	Morris	Kane County
56.11	Staver-Chicago	Monckmeier	Kane County
55.20	National	McMillan	Denver
55.15	Stutz	Anderson	Philadelphia
55.15	Stutz	Anderson	Philadelphia
55.13	National	Herr	Philadelphia
55.13	National	Herr	Philadelphia
54.53	Cole	Jenkins	Cincinnati
54.09	Cole	Jenkins	Hamilton County
53.80	Abbott-Detroit	Mort Roberts	Aurora cup
53.60	National	Herrick	Bakersfield
52.53	Ohio	Thatcher	Hamilton County
52.30	E-M-F	Siebel	Santa Monica
51.80	Ford	Thorney	Denver
51.31	Westcott	Knight	Cincinnati
51.13	Ford	Kulick	Tiedeman
51.09	Ford	Kulick	Aurora cup
50.78	Ohio	Mathews	Cincinnati
49.78	Cino	Gilchrist	Hamilton County
49.58	Cino	Gilchrist	Cincinnati
49.30	Ohio	Mathews	Hamilton County
48.72	Abbott-Detroit	Robbins	Aurora cup
44.40	Buick	L. Nikrent	Bakersfield
43.20	Chalmers	Weathers	Bakersfield
35.90	Ford	Packer	Bakersfield
27.03	National	Herrick	Desert race
23.60	Franklin	Hamlin	Desert race
22.10	Midland	Carrigan	Desert race
19.40	Buick	L. Nikrent	Desert race

Bakersfield road race and also the desert road race from Los Angeles to Phoenix. His fourth start failed to land him in the money but fourth in the 301-450 class at Santa Monica with an average of 72.14 miles per hour is hard luck—not a beating. Some might make light of the desert race because of its slow pace, but that contest has been recognized as one of the American classics and attracted a field of sixteen starters. Bakersfield, it must be admitted, was not a very classic victory, but Herrick had Bert Dingley to beat and any time any one beats Bert Dingley, then there has been a race.

Hughes' record shows six starts which returned three firsts and a third—certainly a consistent showing. But Hughes did not get the competition Herrick did, save in the Elgin National. He won every class race in which he started, but lost out when he went out of his class. He was third in the Elgin National, sixth in the Fairmount Park sweepstakes and in the Vanderbilt he failed to finish. All things considered, then, the crown must go to Herrick, but all must admit that Hughes has shown himself to be one of the best drivers in the country—cool, heady, a clever judge of pace and with remarkable ability to nurse his car and go through to the finish.

ERWIN A. BERGDOLL

This young Philadelphian gratified a long-cherished ambition when he won the 1911 Fairmount Park road race. He also started in the grand prix

SPENCER WISHART

Second in the Fairmount Park and third in the Vanderbilt but disqualified in former for losing mechanic. A top-liner

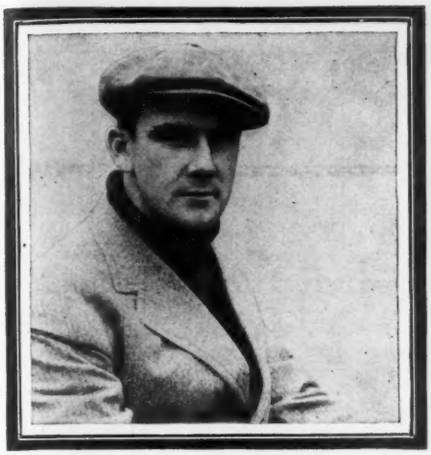
Charley Merz went just about as far as he could in his five starts—two firsts and two seconds, while once he was outside the money—fourth in the Santa Monica free-for-all, won by Herrick. Perhaps Merz should be given more consideration in this matter of championship classing after one has reviewed his consistent performances. He finished in every one of his five races and his averages were 74.42, 71.54, 66.8, 65.7 and 64.6 for the Santa Monica free-for-all, the Santa Monica 301-450 class, the Oakland 301-600 class, the Illinois cup and the Oakland free-for-all, respectively.

Mulford and Bruce-Brown

Two other drivers should not be overlooked—Mulford and Bruce-Brown, but

LOUIS DISBROW

A free-lance who was a class winner at Philadelphia and also a contestant in grand prix and Vanderbilt at Savannah



MORTIMER ROBERTS
Winner of Aurora cup at Elgin and a participant in Tiedeman cup Savannah meet

The road racing season of 1911 was one of the most active experienced in this country, despite reports that contests are losing their hold among manufacturers. True it is that in several branches of the sport there was a dearth of entries, but not so in road racing. There were twenty-seven races run on the American highways, which is as many as there were in 1909, a banner year. In this are figured the class events, which of course are just as much road races as free-for-alls. Readers of this review may note a discrepancy between Motor Age's tables and the report of the American Automobile Association, but this is explained by the fact that the A. A. A. counts only four events

FRANK WITT
Witt drove in only one race in 1911—the Tiedeman cup at Savannah, which he won

neither figures in the championship fight. Their claims for recognition are based on the importance of their victories. The winning of either the Vanderbilt or the grand prix carries with it a prestige that cannot be obtained in any other road race in the world, but a win of either, not backed up by something else, hardly gives one a claim on the championship of the year. That is why neither Mulford nor Bruce-Brown is ranked higher.

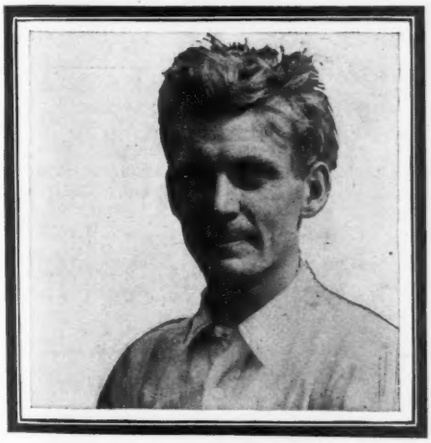
BRUCE KEENE
Youngster who started a promising career by winning 231-300 class road race at Santa Monica

Of the forty-four makers who raced in 1911 there were twenty-four who got in the money, either first, second or third, while the firsts were divided among twelve different concerns. In 1910 twenty-seven makes were placed and in 1909 twenty-eight.

Division of the Glory

First places in 1911 were divided fairly evenly, nineteen different drivers pulling

(Continued on page 8)



LOUIS NIKRENT
Winner of two races in 1911—the light-car events at Bakersfield and at Santa Monica

at Fairmount Park, whereas Motor Age figures that inasmuch as the entire field in the four classes were running for a grand prize of $2,000 that this made a sweepstakes which should be ranked as a road race. This classification explains why Bergdoll, for instance, is given two firsts—he got both his class and the sweepstakes. Each car and driver were given two starts at Philadelphia.

In 1911 there were forty-six different makes in competition as against fifty-five in 1910 and sixty-three in 1909, which would seem to show the makers are not supporting racing the way they used to.

JOHNNY JENKINS
Winner of light-car race at Cincinnati and a contestant in other big events of the year

RESULTS OF ROAD RACES RUN IN EUROPE DURING SEASON OF 1911

Race	Date	Car	Driver	Starters	Finishers	Distance	Time	M. P. H.
Light-Car Race	June 27	Delage*	Babiot	38	13	387.6	422:41	55.1
Boulogne, France	Second	Peugeot	Boillot				423:52	54.9
	Third	Delage	Thomas				427:17	54.8
Targa Florio	May 15	S. C. A. T.	Cerano	15	3	279	572:22⅖	29.2
Sicily	Second	Lancia	Cortese				598:20⅕	27.9
	Third	Mercedes	Soldatenkoff				623:23	27.1
Grand Prix	July 24	Fiat	Hemery	14	1	402	426:30	56.54
France	Second	Bugatti	Friederich				9 laps	
Sarthe Circuit	Third	Rolland-Pilain	Gabriel				9 laps	
Liedekerke Cup	Sept. 6	Fondu	Verhaegen	3	1	248.4	372:00	40.8
Ostend								
Belgium								
Ostend Cup	Sept. 6	Peugeot	Boillot	5	1	207	208:33	59.5
Ostend								
Belgium								
Williame Cup	Sept. 6	Peugeot	Boillot	4	2	207	208:33	59.5
Ostend		Excelsior	Coosemans				225:55	54.9
Belgium								
Volturette Cup	Sept. 6	Peugeot	Goux	2	1	207	232:28	53.4
Ostend								
Belgium								

*Winning car was equipped with a 4 by 4-inch four-cylinder motor

TABULATION SHOWING RESULTS OF TWENTY-SEVEN ROAD RACES DURING 1911 SEASON

Race	Date	Car	Bore	Stroke	Driver	No. of Starters	No. Finish	Distance	Time	M. P. H.
Grand Prix	Nov. 30	Fiat	5.90	7.87	D. Bruce-Brown	16	6	411.36	331:29	74.45
Savannah Automobile Club	Second	Benz	6.10	7.87	E. A. Hearne				333:33	73.99
Free-for-all	Third	Mercedes	5.1	7.1	R. de Palma				334:40	73.25
24 laps	Fourth	Fiat	5.90	7.87	C. Bragg				351:51	70.10
	Fifth	Pope Hummer	4¾	5½	L. Disbrow				386:49	63.86
Also started: Abbott-Detroit, Mitchell, 23 laps; Abbott-Detroit, Limberg, 21 laps, both running; Lozier, Mulford, 23 laps; Fiat, Wagner, 15 laps; Buick, Basle, 10 laps; Marmon, Patschke, 9 laps; Mercedes, Wishart, 9 laps; Benz, Bergdoll, 8 laps; Benz, Hemery, 7 laps; Marmon, Burman, 5 laps; Buick, Cobe, 3 laps										
Elgin National	Aug. 26	National	5	5 11/16	L. Zengel	10	3	302.5	275:39.08	66.38
Elgin, Ill.	Second	Alco six	4.7	5½	H. Grant				281:58.72	64.90
Chicago Motor Club	Third	Mercer	4⅜	5	H. Hughes				282:09.97	64.54
Stock-car championship										
Under 600 inches; 36 laps										
Also started: Alco six, Lee, 33 laps, still running; Pope-Hartford, Buick, 24 laps; Alco six, Hartman, 20 laps; Lozier, Mulford, 8 laps; Simplex, Wishart, 4 laps; Simplex, de Palma, 2 laps; National, Aitken, 2 laps										
Vanderbilt Cup	Nov. 27	Lozier	5½	6	R. Mulford	14	6	291.38	236:00.67	74.07
Savannah Ga.	Second	Mercedes	5.1	7.1	R. de Palma				238:11.95	73.39
Savannah Automobile Club	Third	Mercedes	5.1	7.08	S. Wishart				246:20.37	70.97
Under 600 inches	Fourth	Lozier	5⅜	6	H. Grant				250:23.57	69.82
Non-stock; 17 laps	Fifth	Fiat	5	7½	E. H. Parker				254:25.88	68.71
	Sixth	Pope Hummer	4¾	5½	L. Disbrow				259:02.68	67.49
Also started: Abbott-Detroit, Mitchell, 16 laps; Abbott-Detroit, Limberg, 14 laps; Marmon, Patschke, 7 laps; Marmon, Burman, 6 laps; Fiat, Bruce-Brown, 5 laps; Fiat, Matson, 4 laps; Mercer, Hughes, 3 laps; Jackson, Cobe, 1 lap										
Fairmount Park Cup	Oct. 9	Benz	6.1	6.2	E. Bergdoll	16	9	202.5	198:41.35	61.14
Philadelphia, Pa.	Second	Lozier	5⅜	6	R. Mulford				201:52.78	60.48
Quaker City Motor Club	Third	National	5	7½	L. Zengel				205:59.36	59.1
Sweepstakes; nonstock	Fourth	National	5	5 11/16	L. Disbrow				208:22.32	58.3
	Fifth	Lozier	5⅜	6	H. Grant				208:50.37	58.2
	Sixth	Mercer	4⅜	5	H. Hughes				209:45.30	58.0
	Seventh	Stutz	4¾	5½	G. Anderson				220:23.05	55.15
	Eighth	National	5	5 11/16	D. Herr				220:33.87	55.13
	*	Mercedes	5.1	7.1	S. Wishart				200:11.42	60.7
Also started: Mercedes, Wallace, 22 laps; Mercer, de Palma, 22 laps; Ohio, Matthews, 22 laps; Ohio, Parker, 20 laps; Case, Jagersberger, 15 laps; Cole, Basle, 6 laps; Fiat, Betz, 1 lap *Disqualified										
Free-for-all	Oct. 14	National	5	5 11/16	H. Herrick	12	5	202	162:27.6	74.62
Ferris Cup	Second	Marmon	4¾	7	C. Patschke				165:42.73	73.24
Santa Monica	Third	Marmon	4¾	7	J. Dawson				167:54.53	72.16
Los Angeles, Cal.	Fourth	National	5	5 11/16	C. Merz				169:24.53	71.54
24 laps	Fifth	National	5	7½	H. Wilcox				170:53.6	70.93
Also started: Pope-Hartford, Dingley, 23 laps; Stutz, Lewis, 23 laps; Marmon, J. Nikrent, 22 laps; Mercer, Hanshue, 22 laps; Fiat, Tetzlaff, 22 laps; Inter-State, Endicott, 3 laps; Midland six, Duby, out first lap										
Cincinnati Trophy	Sept. 9	Fiat	5½	5	E. A. Hearne	10	5	200	209:03	56.68
Cincinnati, O.	Second	Cole	4½	4½	J. Jenkins				220:04.27	54.53
Fernbank Association	Third	Westcott	4⅛	5¼	H. Knight				233:38.75	51.31
Nonstock	Fourth	Ohio	4 15-32	4¾	Mathews				236:19.58	50.78
Under 600 inches; 25 laps	Fifth	Cino	4⅜	5	Gilchrist				241:59.60	49.58
Also started: Ohio, Thatcher, 19 laps; Schacht, Jeffkins, 8 laps; Cino, Burt, 4 laps; Cino, Ramey, 4 laps; Stutz, Anderson; Colby, Pearce										
Desert Race	Nov. 4-7	National	5	5 11/16	H. Herrick	16	4	551	1223:22	27.03
Los Angeles-Phoenix	Second	Franklin 6	4	4	R. Hamlin				1374:35	23.6
Non-stock	Third	Midland			T. Corrigan				1461:24	22:1
	Fourth	Buick			L. Nikrent				1586:35	19.4
Also started: Maxwell, Smith; Pope-Hartford, Tremaine; Stoddard-Dayton, Stearns; Cadillac, Bramlette; E.-M.-F., La Casse; Flanders, Soules; Cole, Jenkins; Mercer, Hanshue; Case, Brong; Buick, Ferguson; Fiat, Tetzlaff; Midland, Bigelow.										
Oakland-Panama	Feb. 22	Pope-Hartford	4¾	5½	B. Dingley	5	2	163.9	149:30	65.9
Oakland, Cal.	Second	National	5	5 11/16	C. Merz				152:12	64.6
Free-for-all; 15 laps										
Also started: Pope-Hartford, Fleming, 14 laps; National six, Wilcox, 14 laps; Amplex, Turner, 2 laps										
Free-for-all	July 4	National	5	5 11/16	H. Herrick	4	1	156.1	178:58	53.6
Bakersfield, Cal.	Second	Pope-Hartford	4¾	5½	B. Dingley				181:58	12 laps
Kern County Merchants' Association Nonstock	Third	Mercer	4⅜	5	B. Selfert				196:15	7 laps
16 laps										
Also started: Buick										
601-750 Class	Oct. 9	Benz	6.1	6.2	E. Bergdoll	2	1	202.5	198:41.35	61.2
Philadelphia, Pa.										
Quaker City Motor Club										
Nonstock										
Also started: Fiat, Betz, 1 lap										
Oakland-Panama	Feb. 22	National	5	5 11/16	C. Merz	6	4	152.9	137:20	66.8
Oakland, Cal.	Second	Pope-Hartford	4¾	5½	B. Dingley				138:07	66.5
Nonstock	Third	Pope-Hartford	4¾	5½	J. Fleming				139:21	65.8
301-600 inches; 14 laps	Fourth	Amplex	5	5	Turner				No time taken	
Also started: National, de Palma, 10 laps; Apperson, Hanshue										
451-600 Class	Oct. 9	Lozier	5⅜	6	R. Mulford	5	4	202.5	201:52.78	60.18
Philadelphia, Pa.	Second	National	5	7½	L. Zengel				205:59.36	59.1
Quaker City Motor Club	Third	Lozier	5⅜	6	H. Grant				208:50.37	58.2
Nonstock	*	Mercedes	5.1	7.1	S. Wishart				200:11.42	60.7
Also started: Wallace, Mercedes, 22 laps *Disqualified										

TABULATION SHOWING RESULTS OF TWENTY-SEVEN ROAD RACES DURING 1911 SEASON

Race	Date	Car	Bore	Stroke	Driver	No. Starters	No. Finishers	Distance	Time	M.P.H.
Illinois Cup Elgin, Ill Chicago Motor Club Stock-car championship 301-450 inches; 24 laps	Aug. 25..... Second	National ..... National	5 5	5 11/16 5 11/16	Donald Herr ..... C. Merz	4	2	203	185:55 186:04	65.63 65.57
Also started: Velie, Jeffkins, 20 laps; Velie, Stickney, 17 laps; both running at finish										
301-450 Class Philadelphia, Pa. Quaker City Motor Club Nonstock	Oct. 9..... Second ..... Third	National ..... Stutz ..... National	5 4 3/4 5	5 11/16 5 1/2 5 11/16	L. Disbrow ..... G. Anderson ..... D. Herr	3	3	202.5	208:22.32 220:23.05 220:33.87	58.30 55.15 55.13
301-450 class Santa Monica Los Angeles, Cal. Nonstock; 18 laps	Oct. 14..... Second ..... Third ..... Fourth	National ..... Pope-Hartford Stutz ..... National	5 4 3/4 4 3/4 5	5 11/16 5 1/2 5 1/2 5 11/16	C. Merz ..... B. Dingley ..... D. Lewis ..... H. Herrick	4	4	151.5	122:08.45 123:26.3 124:56.95 126:00	74.42 73.64 72.18 72.14
Sable Cup Denver, Colo. Denver Motor Club Over 300 inches; nonstock	May 30.....	National	5	5 11/16	E. McMillan	2	1	200	210:30	55.2
Also started: Apperson, Ball										
Light-car races Bakersfield, Cal. Kern County Merchants' Association Nonstock 10 laps	July 4.....	Buick ..... Chalmers ..... Ford			L. Nikrent ..... G. Weathers..... G. Packer	7	3	100.3	135:00 139:44 166:42	44.4 43.2 35.9
Also started: Haynes, Buick, Mercer, Franklin										
Savannah Cup Savannah, Ga. Savannah Automobile Club 231-300 class Non-stock; 13 laps	Nov. 27 ..... Second ..... Third	Mercer ..... Marmon ..... Marmon	4 3/8 4 23-64 4 23-64	5 5 5	H. Hughes ..... L. Heinemann ..... J. Nikrent	7	3	222.82	195:37.22 201:41.49 204:42.93	68.34 66.28 65.30
Also started: Mercer, Barnes, 12 laps; Case, Buckley, 10 laps; Mercer, Knipper, 8 laps; Case, Disbrow, 4 laps.										
Light-car race Denver, Colo. Denver Motor Club Under 300 inches; nonstock	May 30..... Second	Ford ..... Oakland	3 3/4 4	4 4	W. Thorney ..... J. McDonald	6	1	200	231:40 Did not finish; given place	51.8
Also started: Warren-Detroit, Borusch; Warren-Detroit, Mustain; Everitt, Fletcher; Michigan, Jackson										
Hamilton County Trophy Cincinnati, O. Fernbank Association Nonstock Under 300 inches; 19 laps	Sept. 9..... Second ..... Third ..... Fourth	Cole ..... Ohio ..... Cino ..... Ohio	4 1/2 4 15-32 4 3/8 4 15-32	4 1/2 4 3/4 5 4 3/4	J. Jenkins ..... Thatcher ..... Gilchrist ..... Mathews	8	4	150	166:29.84 171:19.02 180:29 182:22	54.09 52.53 49.78 49.30
Also started: Schacht, Jeffkins, 8 laps; Cino, Burt, 4 laps; Cino, Ralmey, 4 laps; Colby, Pearce										
231-300 class Santa Monica Los Angeles, Cal. Nonstock; 18 laps	Oct. 14..... Second ..... Third ..... Fourth	Marmon ..... Marmon ..... Mercer ..... Buick	4 23-64 4 23-64 4 3/4 4.3	5 5 5 5	Bruce Keene ..... J. Nikrent ..... H. Hanshue ..... L. Nikrent	9	4	151.5	132:09.95 133:03.5 133:41.20	68.78 68.32 67.99
Also started: Cole, Jenkins, 17 laps; Durocar, McKeague, 16 laps; Lexington, Bigelow, 16 laps; Schacht, Jeffkins, 15 laps; Cole, Siefert, 14 laps										
231-300 Class Philadelphia, Pa. Quaker City Motor Club Nonstock	Oct. 9.....	Mercer	4 3/8	5	H. Hughes	6	1	202.5	209:45.30	57.91
Also started: Mercer, de Palma, 22 laps; Ohio, Matthews, 22 laps; Ohio, Parker, 20 laps; Case, Jagersberger, 15 laps; Cole, Basle, 6 laps										
Kane County Cup Elgin, Ill. Chicago Motor Club Stock-car championship 231-300 inches; 20 laps	Aug. 25..... Second ..... Third ..... Fourth ..... Fifth ..... Sixth ..... Seventh	Mercer ..... Mercer ..... Colby ..... Cole ..... Corbin ..... Cole ..... Staver-Chicago ..	4 3/8 4 3/8 4 1/4 4 1/2 4 1/2 4 1/2 4 3/8	5 5 5 1/4 4 1/2 4 1/4 4 1/2 5	H. Hughes ..... W. F. Barnes, Jr.... W. H. Pearce ..... J. Jenkins ..... A. Maisonville ..... G. Morris ..... G. Monckmeier	11	7	169.5	157:21.52 159:55.47 166:11.7 168:19.30 177:12.65 177:37.83 178:16.17	64.61 63.50 60.19 59.6 56.46 56.32 56.11
Also started: Colby, Armstrong, 14 laps; Cino, Ralmey, 7 laps; Staver-Chicago, Robillard, 7 laps; Colby, Ogren, 5 laps										
Oakland-Panama Oakland, Cal. Nonstock Up to 300 inches; 9 laps	Feb. 22..... Second ..... Third	Mercer ..... Maxwell ..... Ford	4 3/8 4 1/4 3 3/4	5 4 1/4 4	C. Bigelow ..... E. Cooper ..... Aurandt	5	1	98.3	102:54 8 laps 6 laps	57.3
Also started: E-M-F, O'Brien, 5 laps; Inter-State, Michener, 1 lap										
231 and under Santa Monica Los Angeles, Cal. Nonstock; 12 laps	Oct. 14..... Second ..... Third ..... Fourth	Buick ..... Ford ..... E M F..... Flanders	3 3/4 3 3/4 4 3 1/2	3 3/4 4 4 1/2 3 3/4	L. Nikrent ..... H. J. Charles..... B. Siebel ..... G. Soules	9	4	101	103:21.70 105:22.85 115:50.20	59.20 57.21 52.30
Also started: Reo, Hanshue, 10 laps; Locomobile, Vic Fleming, 10 laps; Sunset, Dequelin, 8 laps; Regal, Anthony, 5 laps; Maxwell, Smith, 2 laps										
Tiedeman Cup Savannah, Ga. Savannah Automobile Club 161-230 class Non-stock; 10 laps	Nov. 27 .... Second ..... Third ..... Fourth	E.-M.-F. ..... E.-M.-F. ..... E.-M.-F. ..... Ford	4 4 4	4 1/2 4 1/2 4 1/2	F. Witt ..... R. Evans ..... J. Tower ..... F. Kulick	6	4	171.40	179:19.34 180:12.34 181:33.84 201:07.50	57.35 57.06 56.64 51.13
Also started: Abbott-Detroit, Roberts, 6 laps; Abbott-Detroit, Hartman, 1 lap.										
Aurora Cup Elgin, Ill. Chicago Motor Club Stock-car championship 161-230 inches; 16 laps	Aug. 25..... Second ..... Third	Abbott-Detroit .. Ford ..... Abbott-Detroit ..	4 3 3/4 4	4 1/4 4 4 1/4	Mortimer Roberts ... F. Kulick ..... A. M. Robbins.....	3	3	135	151:11.32 159:11.53 166:56.52	53.80 51.09 48.72

(Continued from page 5.)

down the big end of the purses in the twenty-seven events. In all 102 different pilots competed, of which number forty-eight were in the money. A glance at 1910 shows that 106 drivers competed and that forty of them were either first, second or third.

In all 202 cars started in the twenty-seven races and ninety-two of them finished, which certainly is a good showing. The total distance of the twenty-seven races was 5,582 miles, while the average of the winners' figures up to 63.22 miles an hour, which is by far the best of the last 3 years. The field as a whole performed sensationally, for the ninety-two cars that finished had a grand average of 59.51 miles an hour.

There were just two cases of repeating among the drivers, the come-backs being Herrick and Bruce-Brown. The former won the desert road race in 1910 in a Kisselkar and again was successful in 1911, but in a different car. Bruce-Brown won the grand prix in a Benz in 1910 and in 1911 he was successful in a Fiat. Mulford in the Lozier tried hard to repeat in the Elgin National, but went out in eight laps, while Grant, twice winner of the Vanderbilt, only ran fourth in the 1911 renewal of the classic. Knipper failed to repeat in the Savannah challenge cup.

Despite the general supposition that road racing is a dangerous sport, there were only five fatalities in connection with the running of the 1911 schedule—at Elgin and at Savannah. Only two of these were in the races themselves, the others occurring during practice. Ralph Ireland of the Staver team was killed while training for the races at Elgin, while in the Elgin National itself Dave Buck and his mechanic, Sam Jacobs, met death when the Pope-Hartford turned turtle. At Savannah Jay McNay, driver of the Case, was killed while training for the Savannah challenge cup race, and his mechanic, H. F. Maxwell, was so seriously injured that he died about a week later.

While road racing was a big success in this country in 1911, as much could not be said about the conditions in Europe. In fact the game was not as good in 1911 on the other side of the Atlantic as in 1910. Attempts to revive the grand prix, once the world's greatest classic, failed and this left the big event of the year the light-car race at Boulogne, France, which really was a remarkable contest, bringing out thirty-eight machines, the biggest field of the year. In this the French makes were singularly effective and for the first time in several years France successfully defended its reputation as a producer of fast cars.

There was a grand prix road run but it was a miserable apology for the real article. It took place over the Sarthe circuit and brought out fourteen contenders. Only one of these finished, however, a Fiat driven by Hemery.

Regulations for the French Grand Prix

Two Races Will Be Run Together on 2 Consecutive Days Over Distance Approximately 1200 Miles—Entries Close December 31—England, Germany, Belgium and Italy Sure

PARIS, Dec. 1—Official regulations are now out for the grand prix races to be held by the Automobile Club of France at Dieppe during the second fortnight of next June. There is very little in the official rules that was not known already to manufacturers. The two classes provided for are racers without any limitation of power or weight, the only restriction being that the greatest width must not exceed 69 inches; and cars having not fewer than four cylinders, the total cylinder area of which must not exceed 3 liters, with a total minimum weight of 1,763 pounds, without water, oil, gasoline, tools or spares.

The two races will be run together on 2 consecutive days, over a distance of approximately 1,200 miles. At the end of the first day each car will be locked in a special box under a military guard and not allowed to be touched until the moment of starting on the second day. Probably, as in the 1906 grand prix race, the cars will be drawn out of their boxes onto the road by a team of official helpers and handed over to each driver at his official time of starting. The driver and mechanic must average not less than 132 pounds each, and must sit side by side. In case of necessity the mechanic can replace the driver during the race, and a change of drivers can be made at the end of any round, but only at the tire stations in front of the grandstands. The prizes are $4,000 for the first car, in whatever class it may be entered, and $2,000 for the best team performance, with a minimum of three cars. Entries must be made before 6 p. m. of December 30, and unless a minimum of thirty cars is obtained on that day the races will not be held.

At the present time the officially paid entries comprise four Lorraine-Dietrich cars in the no-limit class, two Peugeots in the big-car class, and two Lion-Peugeots in the light-car class. It is known that the Darracq company will enter four cars almost immediately, and the Gregoire company will do the same. In each case the firms will put in two big and two small racers. At the Darracq factory, both poppet and Henriot rotary-valve motors are being built, and it will be decided later which set will be used in the race.

In France it is confidently expected that American cars will start in the French race, for it is recognized that since official races were last held here enormous progress has been made by American manufacturers in the racing game, and that they are now in a position to carry off the trophy. A representative of the National company, at present in Paris, stated that his firm had the matter under consideration, and the same statement has been made by Marmon, Mercer and Lozier. English, German, Belgian and Italian representation in this international road contest is assured.

MORE TRAIL-BLAZING

Washington, D. C., Dec. 11—A party of pathfinders, including A. L. Westgard, of the A. A. A., Preston Belvin, president of the Virginia State Automobile Association, State Highway Commissioner Wilson and a number of others, arrived here yesterday after a strenuous trip in blazing a route from Richmond to Washington. The distance covered was 150 miles and owing to the muddy roads it took two days to complete the journey. The object of the trip was to lay out a route between the Richmond capital and this city as the connecting link in the Quebec to Miama international highway. Mr. Westgard, who has made a number of transcontinental tours, declares the 20-mile stretch of road lying between Washington and Fredericksburg, Va., is the worst to be found in the United States. This route is known as the old telegraph road, famous in the days of the civil war. "It could be made a fine highway," said Mr. Westgard, "but it will cost a lot of money."

GOODYEAR'S GOOD REPORT

Akron, O., Dec. 11—In the annual meeting of the Goodyear Tire and Rubber Co., held at Akron, O., it was shown that business had increased fully 50 per cent during the fiscal year just ended. External evidences of this growth are in the mammoth buildings the company has been adding to the factory and the new office building now being erected to take care of administration. The company now has forty branches, located in various parts of the country and this number will be increased considerably during the coming year. The factory has been practically doubled within a comparatively short time and it is set forth in the reports that the company now has 1,000,000 square feet of floor space available for manufacturing operations. All of the officers have been re-elected, as follows: Frank A. Seiberling, president; C. W. Seiberling, vice-president; G. M. Stadelman, secretary; F. H. Adams, treasurer; P. W. Litchfield, factory manager. Mr. Litchfield's new position is a promotion. He formerly was superintendent of the factory.

Winton Prize to Cincinnati Chauffeur

P. W. Mulford Wins Annual Up-Keep Contest with 27,325 Miles to His Credit, His Repair Bill Amounting to $1.20—Sixty-four Cars Considered, Average Being $1.08 Per Mile

CLEVELAND, O., Dec. 11—The annual Winton upkeep contest has been decided and according to the decision of the judges the winner of the $1,000 first prize is P. W. Mulford, chauffeur for R. R. Reilly, of Cincinnati, who drove 27,325 miles during the season at an upkeep expense of $1.20.

This contest is promoted by the Winton Motor Car Co. to encourage chauffeurs to get the best possible results from their cars at the lowest possible repair expense. Chauffeurs are required to send the company monthly reports of mileage and repair expense, these reports being attested by the car owners. At the end of the contest, sworn affidavits are required from both chauffeur and owner. These complete reports and affidavits are placed in the hands of disinterested judges, who award the money. The judges this year were E. E. Schwarzkopf of New York, D. G. Newton of Cleveland and R. G. Howse, A. C. G. Hammesfahr and Earl Reeve, all of Chicago.

This is the fourth annual award to Winton six chauffeurs. In the four contests fifty prize winning cars totaled 744,426.2 miles at a repair expense of $170.27, averaging 22.8 cents per 1,000 miles. In this year's contest there were sixty-four contestants that drove 5,000 miles or more each, including the prize winners. These sixty-four cars were driven 808,295.2 miles, averaging 12,629.6 miles per car. Their total repair expense was $376.10, averaging $13.69 per car and $1.08 per mile.

Taking the total figures for 1910 and 1911, including all cars that traveled more than 5,000 miles each, winners and non-winners together, the figures show that 138 cars traveled a total of 1,609,526.9 miles, averaging 11,663.2 miles per car. The total repair expense for this distance was $1,965.26, averaging $14.24 per car, and $1.22 per 1,000 miles.

One purpose of the contest is to show owners at what low expense it is possible to operate a car when properly cared for and properly driven.

These judges met in Cleveland, December 7, and awarded prize money as follows:

$1,000, to P. W. Mulford, chauffeur for R. R. Reilly, Cincinnati, O. 27,325 miles. Repair expense, $1.20.

$500, to R. W. Lee, chauffeur for S. J. Franklin, Millville, N. J. 25,290 miles. No expense.

$250, to William E. Ochsle, chauffeur for Martin Daab, Hoboken, N. J. 24,221.4 miles. Repair expense, 10 cents.

$150, to John Dugan, chauffeur for Mrs. William E. Fox, New York city. 24,082.6 miles. No expense.

$100, to William Tesnow, chauffeur for J. W. Strackbein, Chicago. 23,970 miles. No expense.

$100, to John L. Dondero, chauffeur for F. M. Hauthaway, Boston, Mass. 22,932 miles. No expense.

$100, to G. W. Bach, chauffeur for Mrs. Anna M. Hermes, Pittsgurg, Pa. 21,258 miles. No expense.

$100, to G. W. Butler, chauffeur for J. E. Clenny, Chicago. 21,133 miles. No expense.

$100, to P. O. Hawkins, chauffeur for W. B. Simpson, Chicago. 20,551 miles. No expense.

$100, to Lloyd Hoge, chauffeur for F. H. Greene, New York city. 19,096 miles. No expense.

$100, to M. T. Jones, chauffeur for Dr. A. H. Hilsman, Albany, Ga. 21,505 miles. Repair expense, $1.25.

$100, to B. A. Trimpe, chauffeur for E. W. Edwards, Cincinnati, O. 19,084.1 miles. No expense.

$100, to E. P. Brubaker, chauffeur for Jas. W. Stevens, Chicago. 18,960 miles. No expense.

$100, to Samuel Emerson, chauffeur for A. S. Gilman, Cleveland, O. 15,017 miles. Repair expense, 25 cents.

$100, to W. R. Saxton, chauffeur for E. M. Potter, New York city. 14,259 miles. No. expense.

$100, to L. V. Wright, chauffeur for Charles F. Lembke, New York city. 14,235 miles. No expense.

$100, to S. E. Johnson, chauffeur for E. B. Putnam, Philadelphia, Pa. 17,396 miles. Repair expense, $7.32.

$100, to William J. Green, chauffeur for Dr. E. L. Smith, Chicago. 16,531.7 miles. Repair expense, $10.76.

$100, to Everett E. Stokes, chauffeur for Henry Hall, Philadelphia, Pa. 13,853 miles. No expense.

$100, to Alfred Colscen, chauffeur for W. R. Noone & Co., Boston, Mass. 13,634.1. No expense.

Total twenty cars, 394,333.9 miles. Total repair expense $20.88.

Tire expense is not included, nor is the expense for unavoidable accidents.

WILL MAKE THE DETROITER

Detroit, Mich., Dec. 12—Organization of the Briggs-Detroiter Co., which will manufacture a touring car known as the Detroiter, has been completed, articles of association having been filed at Lansing last week. The capital stock is $200,000, of which 80 per cent is paid in. The company has purchased from the Reinforced Concrete Pipe Co., of Jackson, Mich., an unoccupied factory and about 2 acres of ground at Holbrook avenue and the Grand Trunk Railroad, and will begin operations as soon as the plant can be equipped. The building is of reinforced concrete, one-story in height and was built for the Jackson concern, which afterwards decided not to move here. The price paid by the Briggs-Detroiter Co. for the property is said to have been about $50,000. The company is planning on turning out upwards of 500 cars the first year. The new company is headed by Claud S. Briggs, who organized the Krit Motor Car Co. and later became general manager of the Brush Runabout Co. J. A. Boyle is vice-president and Emil D. Moessner secretary-treasurer.

ENGINEERS RETURN HOME

New York, Dec. 9—The majority of the sixty American engineers who participated in the first official European visit of the Society of Automobile Engineers returned Thursday. The party consisted of the designing and producing engineers as well as manufacturers representing most of the leading factories.

Coker F. Clarkson, general manager of the American society, declares the trip was a distinct success from several points of view. In addition to the general benefit always derived from journeys into foreign lands, it resulted in much more intimate acquaintance between the always busy S. A. E. members, and in the inauguration of and a great step forward in actual affiliation between American and European motor car engineers.

As to the comparative merit of European and American design and construction, Mr. Clarkson said there was much to be learned at home and abroad, but that on the whole, considering extended efficient use of full automatic machine tools, quantity production, modern factory methods and design to meet severe road conditions unknown in Europe, the American engineer can show greater development and more efficient means to the desired end of highly practicable mechanical road locomotion.

SUIT AGAINST E-M-F HALTED

New York, Dec. 13—Special telegram—The withdrawal of a juror in the suit for $100,000 damages brought by the H. J. Koehler Co., against the E-M-F Co., halted the proceedings abruptly in that case and probably will result in a delay of several months. The case was called for trial in part 14 of the supreme court today and had proceeded but a short time when it was discovered that the bill of complaints would have to be amended to cover a new state of facts that developed. Paul Bonynge, representing the plaintiff company moved for the withdrawal of a juror and leave to amend the petition. The suit is based upon alleged failure to confirm to the terms of a contract that existed between Koehler and the company in 1908, 1909 to represent it in the metropolitan field. The contract called for the delivery of 1,000 cars to Koehler and he contends that only 546 were so delivered. The company maintains that the Koehler contract was modified by written communications and that it holds a release from the plaintiff against inability arising out of the contract.

KISSEL INCREASES STOCK

Hartford, Wis., Dec. 12—The Kissel Motor Car Co., of Hartford, Wis., has increased its capital stock from $400,000 to $1,000,000 to provide for the increased business, extensions now under way or in prospect, and other activities. The Kissel company is now completing work on the construction of a large addition, 107 by 407 feet in size and three stories high, with a one-story wing, 50 by 407. feet.

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Comfort of Passengers

THE comfort of the car passengers is being more considered today than ever before. For years the engineering departments of factories have toiled on the matter of developing the motors to the highest point of efficiency; of getting all of the kinks out of the carbureter, the lubrication, the cooling and ignition; of making the clutch, gearset and axles stronger and therefore bringing them out of the realm of troubles; and during much of this time the question of easy riding has been overlooked. Today situations have changed: There are hundreds of buyers who know that they can get every satisfaction out of a dozen different makes of chassis and so the arguments on motors, gearset and chassis design do not appeal very strongly to them. But to these people the problem of easy riding is quite important. Many a sale has been made by the easy riding of the demonstrator, whereas sales have been lost, due to the demonstration being too fast over rough street car crossings or over rough roads. Not a few makers have improved the easy riding qualities of the car by improving the upholstery and using deeper seat cushions. Cushions are nearly twice as deep as they used to be. Some makers have gone further and have tilted the seat cushions so that the unpleasant slipping off of the seat has been removed. Others have added the adjustable foot rail for the tonneau, which is a very important feature. But many have gone further: The fitting of shock absorbers is becoming more common and improvements are being made annually in the springs used. When all of these have been done there remains much still to be done. The proper tire inflation is a big factor; the proper balancing of the car is a big factor; the proper distribution of body weight between the front and rear axles is a big factor; and there are not a few other things to be taken into consideration. All of these point to adding to the comforts of the passengers.

IN the early days of motoring the tossing tonneau passengers received in a country ride was talked of as one of recreation features of the trip. In those days it all was new. Many never had been through the country before and they were willing to be subjected to any kind of bouncing around for the sake of enjoying the outdoor air and seeing the scenery. In those days many of the passengers thought it was most wonderful that a car should be able to go over many of the country roads at all. Those days are over. People are becoming accustomed to seeing the country; they have become accustomed to the country air and they have learned that one car tires a person out in a long day's run and that another car does not; in a word, they have had their attention drawn to the fact that easy riding is a big factor in a car. Never before was the term pleasure car more applicable.

TRUE, the car is a business proposition today, but being a business proposition it cannot get away from the pleasure feature, because the more pleasant the trip and riding the more will it be used for business. If every car were rough and jostled the passengers around on a city street, those passengers would sooner travel in easy riding but perhaps noisy steam or electric trains. The more pleasant the car is to ride in the more people will use it, and the oftener will they use it. Easy riding is becoming a big factor in cars. Not only is easy riding important, but the adaptation of the seat to the form of the passenger is imperative. There is but little chance of a person buying a $6,000 car if the seats are not comfortable to him. It is no utopian dream to see the time when many buyers will demand that the seats be upholstered to suit their individual needs. Not only will this apply to the upholstering, but also to the slope of the cushions, to the height of the seat and to the width as well. Comfort in car bodies and in car riding is bound to come and will demand attention.

OWNERS nowadays demand much comfort. They not only want easy riding, but they want and insist upon having other comforts which were not thought of several years ago. The self-starter is only one instance. There are besides such things as the demountable rims which lighten the labor so materially when there is tire trouble; there is the electric-lighting outfit which turns on a blaze of light by the pushing of a button, and there are the closed bodies which make riding enjoyable in the winter months. This is a luxury-loving era, and is so recognized by those car makers who strive to give the people what they want, not what the makers think they want.

Season of Self-Starters

NEXT year will be a season of self-starters. During the last few months many of the makers of medium-powered cars have been scurrying about to select a self-starter suitable for next season. Many of these makers felt that the addition of a self-starter would be a big selling argument, the same as demountable rims were a year ago. The result is that today the self-starter is more in demand on the car listing at under $2,000 than in the higher-priced cars. The makers of cars selling under the $2,000 mark always are anxious to compete with higher-priced models and frequently offer inducements not found in higher-priced machines. This was true in the ignition field a year ago and is going to prove itself in the self-starter field this season. Many of the car makers in this class do not hesitate so much about fitting a self-starter as would a maker of high-priced machines. With the medium and low-priced machine the old time reputation is not so much at stake as with the older companies, and this often is responsible for the speed with which innovations are adopted by one class of makers, whereas another class holds back.

THE medium-priced car maker has been a more adventurous persons than the big car builder. Three or four years ago makers of medium-priced cars adopted principles of construction at which the old makers laughed. Year by year many of the older companies have been adopting these innovations one at a time, but it cannot be forgotten that the smaller builders did the missionary work. So it is proving today and it may be expected to continue. It is to be hoped that the self-starter will be taken up by all of the companies because there is not any other accessory, if the term may be used, that is more needed on the modern car. The old cranking task has proven an expensive one to many; many fractured arms have resulted from it; but it has been expensive in other ways. It has caused illness in not a few cases, due to drivers getting heated up on cold mornings in their effort to get the car going. The self-starter will create a more general use of the car by the women, who heretofore have refrained from using gasoline cars because of the troubles of cranking.

3,000 Men Build 33 Miles of Road in Day

Residents of Lincoln County, Oklahoma, Perform Remarkable Feat as Highway Example

CHANDLER, OKLA., Dec. 11—The most cosmopolitan industrial army ever assembled in the state of Oklahoma built a highway across Lincoln county Thursday, December 7, between the rising and the setting of the sun. A work that had been carefully planned for many weeks was completed and when the sun had disappeared beyond the western hills, 33 miles of roadway had been constructed across the county from east to west.

The county seat of Chandler was deserted. The mayor issued a proclamation declaring a holiday and merchants, bankers, professional men and artisans reported for work. Two thousand teams and 3,000 men gave their services for 8 hours to build the road, half of which is of hard surface and the remainder of dirt, furnishing a base for motor cars on the one side and for the unshod farmers' horses on the other, and providing a road that is suitable for dry weather or for wet.

At 7 o'clock in the morning the whistles of the factories of Chandler announced that time was called for these men, a large number of whom were unfamiliar with the handling of mule teams, scrapers, shovels and dynamite. But capable bosses were in charge of sections of the road, the organization worked to advantage, and Lincoln county boasts of a 33-mile good road that was built without the expenditure of a penny.

Persons traveling over the road while it was in course of construction were asked to pay toll—in good humor, the workers asked that the driver of each vehicle pay $1 into a fund which will be used to maintain the road. Responses were prompt; all drivers passing through the county showed sympathy with the movement and many dollars were collected in this informal way.

Lawyers, bankers, plumbers, school teachers, clerks, merchants and farmers worked side by side. The spirit of cooperation was in the air, with the stores of Chandler and other towns closed for the day, the interest of the populace turned to this volunteer enterprise which had been crystalizing for many months, and the army worked in unison.

At noon the women of the county served a great dinner. The table was 33 miles long and boiling pots of coffee were available at every sixteenth of a mile. Hot food was served along the entire line; it was the longest dining table recorded in the history of road building.

A feature of the work was the challenge which had been issued by Roy Hoffman, an attorney, who is colonel of the First Regiment of the Oklahoma National Guard, to H. M. Johnson, president of the First National Bank of Chandler. The challenge was of the peaceful kind—the contest was with a team of mules and a shovel. The loser, the one who performed the least amount of work, was scheduled to pay for a dinner at the leading hotel of Chandler. The judges were the road supervisors of the township. The decision of the arbiters was unanimous—a draw—and 300 invitations have been sent out for the dinner which these two men will buy to celebrate the building of a cross-county 33-mile highway without the spending of a dollar.

BAY STATERS HOLD BANQUET

Boston, Mass., Dec. 11—The annual banquet of the Bay State Automobile Association was held tonight at the Somerset hotel, there being present some 250 men prominent in the motoring world, including Mayor John F. Fitzgerald of Boston, Hugh Chalmers of Detroit, Chairman A. G. Batchelder of the A. A. A. executive committee and others who are leading lights in Massachusetts.

In his speech Mayor Fitzgerald called attention to the wide use of motor cars on the streets of Boston and then hinted that he thought the wealthy men could afford to pay a little more each year toward the maintenance of the highways. He cited facts and figures showing how Boston paid the greater part of the state tax for many improvements, but that it did not get all its benefits.

George W. Smith, president of the Boston chamber of commerce, called attention to the fact that while the Bay State had the best highways of the country, the city of Boston really was pocketed, so far as motorists were concerned, because, to get to the fine roads, one had to go through a lot of narrow streets. He urged the adoption of the plan on which the chamber of commerce officials are working, that of building radiating highways that will connect directly with the state roads and in that way save a lot of time in reaching the outskirts and also in getting into Boston. Harry W. Ford spoke on salesmanship in place of Hugh Chalmers.

Coming Motor Events

December 30-January 6—Buffalo Automobile Trade Association show; H. G. Johnson, manager, 401 Franklin street, New York.

January 2-11—Importers' salon, Hotel Astor, New York.

January 6-20—Madison Square garden show; Automobile Board of Trade, H. A. Bonnell, manager, 7 East Forty-second street, New York. Pleasure cars and accessories, 6-13; commercial cars and accessories, 13 to 20.

January 10-13—Second annual show, Peoria; A. H. Whigham, manager, Peoria, Ill.

January 10-17—Annual show, Grand Central palace; National Association Automobile Manufacturers, S. A. Miles, manager, 7 East Forty-second street, New York.

January 13-19—Milwaukee show; B. J. Ruddle, manager, Milwaukee, Wis.

January 13-27—Show of Philadelphia Automobile Trade Association, Philadelphia, Pa.

January 15-20—Show at Toledo, O.; H. V. Buelow, manager, Toledo, O.

January 15-20—Show at St. Paul; W. F. Frei, secretary, St. Paul, Minn.

January 15-20—Twelfth annual show, Madison Square garden, commercial division, Automobile Board of Trade, H. A. Bonnell, manager, 7 East Forty-second street, New York.

January 18-20—Annual meeting Society Automobile Engineers, New York.

January 22-27—Show at Detroit, Mich.; W. R. Wilmot, manager, 501 Bowles street, Detroit, Mich.

January 22-27—Show at Providence; Arthur S. Lee, manager, 52 Richmond street, Providence, R. I.

January 22-27—Annual show, Rochester, N. Y.

January 27-February 10—Eleventh annual show, Coliseum, Chicago; National Association Automobile Manufacturers, S. A. Miles, Manager, 7 East Forty-second street, New York. Pleasure cars, January 27-February 3; commercial, 3-10.

January 27-February 10—Annual show, Pittsburgh, Pa., Automobile Show Dealers' Association of Pittsburgh. Pleasure cars, January 27-February 3; commercials, February 3-10.

January 29-February 3—Second annual show, Scranton, Pa.

February 1-7—Tentative dates for show at Washington, D. C.

February 1—Show at Harrisburg, Pa.

February 3-9—Show at Albany, N. Y.

February 3-10—Show at Montreal, Canada.

February 5-17—Annual exhibit, St. Louis; F. W. Payne, manager, St. Louis, Mo. Pleasure cars, 5-10; commercials, 12-17.

February 12-17—Show at Troy, N. Y.

February 12-17—Show at Kansas City; Wallace J. Terry, manager, 302 Long building, Kansas City, Mo.

February 12-17—Show at Ottawa, Canada; L. Blumenstein, manager, 49 Metcalf street, Ottawa, Can.

February 14-17—Show at Grand Rapids, Mich.

February 17-24—Pittsburgh show; Pittsburgh Automobile Show Association, T. I. Cochran, manager, Pittsburgh, Pa.

February 17-24—Show at Brooklyn, N. Y., Brooklyn Dealers' Association.

February 17-24—Show at Newark, N. J.

February 17-24—Minneapolis show; H. E. Pence, manager, Minneapolis, Minn.

February 19-24—Show at Hartford, Conn.

February 19-24—Seventh annual show of Omaha Automobile Association, C. G. Powell, manager, Omaha, Neb.

February 19-25—Annual pleasure car show; Cincinnati Automobile Dealers' Association, E. A. Kruse, secretary, Cincinnati, O.

February 20-24—Show at Binghamton; R. W. Whipple, secretary, Binghamton, N. Y.

February 21-24—Fifth annual show; Louisville, Automobile Dealers' Association, Louisville, Ky.

February 21-28—Toronto show; F. I. Fox, secretary, Toronto, Canada.

February 20-28—Annual show, Baltimore, Md.

February 24-March 2—Annual show, Brooklyn, N. Y.

February 26-29—Annual commercial exhibit; Cincinnati Automobile Dealers' Association; E. A. Krause, secretary, Cincinnati, O.

February 26-March 2—Show at Paterson, N. J.

February 26-March 2—Second annual show Elmira Automobile Club, L. Bluemenstein, manager, Elmira, N. Y.

February 28-March 2—Annual Davenport show; Woodworth Clum, manager, Commercial Club building, Davenport, Ia.

March 2-9—Pleasure car show, Boston; C. I. Campbell, manager.

March 4-9—Show at Des Moines; C. G. Van Vliet, secretary, Des Moines, Ia.

March 4-9—Show at Denver; B. G. Ohlander, manager, Denver, Colo.

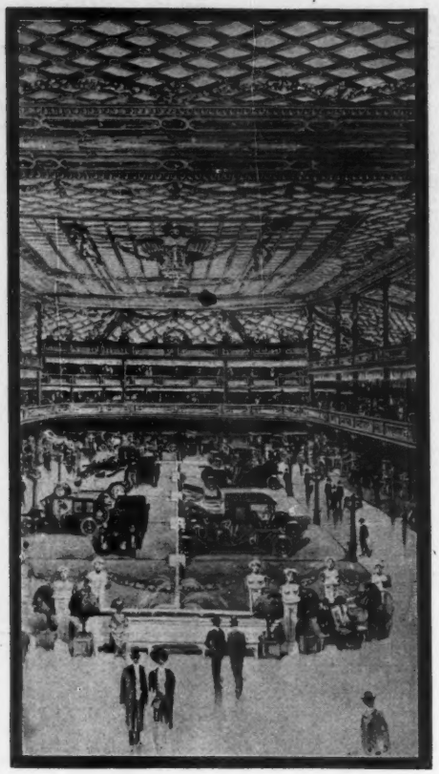
March 6-9—Advertisers' motor show, Tiffin, O.

March 13-20—Show of Boston Commercial Motor Vehicle Dealers' Association, Mechanics' building, Boston; C. I. Campbell, manager.

March 18-23—Show at Syracuse, N. Y.

Importers Will Hold Their Usual Salon

Seventeen Different Makes of Foreign-Built Cars Will Be Shown in Astor Ball Room, New York, January 2-10—List of Accessory Concerns in Madison Square Garden Exhibition



CENTER VIEW OF GARDEN

NEW YORK, Dec. 12—Seventeen different makes of foreign-built cars will be exhibited at the Importers' Automobile Salon, which is to be held in the salon ball room of the Hotel Aster, New York, January 2-10. S. Kjeldsen, who managed the salon last year, is at the helm again this season. Commercial vehicles are excluded.

More than 20,000 square feet of floor space is available. The various makes to be exhibited are the G. G. V. Darracq, deDion-Bouton, Panhard and Renault from France; the Benz, Mercedes and Opel from Germany; the Isotta, Itala, Lancia and S. P. A. from Italy; the English Daimler and Napier from England; the Metallurgique and Minerva from Belgium; and the Pic-Pic from Switzerland.

Following is a list of those accessory concerns which will exhibit in the garden show of the Automobile Board of Trade:

Space No.

157 Ajax-Grieb Rubber Co.
*603 Ajax Trunk and Sample Case Co.
*526 J. Alexander Mfg. Co.
*314 Allen Auto Specialty Co.
178 American Ball Bearing Co.
503 American Bronze Co.
258 American Circular Loom Co.
506 American Oil Pump and Tank Co.
*519 American Rim Co.
423 American Taximeter Co.
541 American Vanadium Co.
502 Aristos Co.
551 James R. Ashley.
566 Atlas Chain Co.
140 Atwater Kent Mfg. Wks.
*281 Auburn Auto Pump Co.
*422 Auto Specialty Co.
245 Automobile Supply Mfg. Co.
*573 Auto Wind Shield Co.
*595 A-Z Co.
125 Badger Brass Mfg. Co.
136 Baldwin Chain and Mfg. Co.
586 Bantam Anti-Friction Co.
555 C. B. Barker & Co., Ltd.
587 Barthel, Daly & Miller.
*309 Batavia Rubber Co.
*577 Baum's Castorine Co.
249 Benford Mfg. Co.
*402 Best Ignition Equipment Co.
*533 John W. Blackledge Mfg. Co.
*292 Booth Demountable Rim Co.
218 Bosch Magneto Co.
253 Bower Roller Bearing Co.
190 Bowser & Co., Inc., S. F.
*261 Briggs & Stratton Co.
186 Briscoe Mfg. Co.
*611 Brown Co.
169 Brown-Lipe Gear Co.
255 Buda Co.
174 Byrne Kingston & Co.
*607 Calmon Asbestos and Rubber Wks.
544 Carnegie Steel Co.
*531 F. S. Carr Co.
244 Champion Ignition Co.
184 Chandler Co.
241 Chicago Telephone Co.
*605 Clucker & Hixson Co.
*563 C. M. B. Wrench Co.
155 Coes Wrench Co.
217 Columbia Lubricants Co.
185 Columbia Nut and Bolt Co., Inc.
154 Conn. Tel. and Electric Co.
152 Consolidated Rubber Tire Co.
*277 Continental Rubber Works.
*266 Adam Cooks Sons.
220 Covert Motor Vehicle Co.
*265 C. Cowles & Co.
*510 Cox Brass Mfg. Co.
187 Wm. Cramp & Sons.
592 C. J. Cross & Co.
*572 Frank H. Cross Co.
240 Crucible Steel Co. of America.
*569 Smalley Daniels.
*516 Dayton Engineering Laboratories Co.
243 Dean Electric Co.
313A Detroit Electric Appliance Co.
250 Detroit Lubricator Co.
138 Diamond Chain and Mfg. Co.
127 Diamond Rubber Co.
182 Joseph Dixon Crucible Co.
*310 Doehler Die Casting Co.
*608 Donnelly Motor Equipment Co.
233 Dorian Remountable Rim Co.
*287 Dover Stamping and Mfg. Co.
*317 Double-Fabric Tire Co.
260 Driggs-Seabury Ordnance Corp.
*404 Duplex Magneto and Spark Plug Co.
*606 John L. G. Dykes Co.
*248 Eagle Co.
602 J. Eavenson & Sons, Inc.
237 Edison Storage Battery Co.
181 Edmunds and Jones Co.
216 Eisemann Magneto Co.
*578 El Arco Radiator Co.
183 Electric Storage Battery Co.
*576 H. A. Elliott.
*413 Endurance Tire and Rubber Co.
159 English & Mersick Co.
*518 Essex Rubber Co., Inc.
*304 Esterline Co.
*417 E. Z. Way Motor Grease Co.
*515 Fedders Mfg. Co.
222 Federal Rubber Mfg. Co.
559 Findeisen & Kropf Mfg. Co.
164 Firestone Tire and Rubber Co.
122 Fisk Rubber Co.
406 L. V. Flechter & Co.
*609 Ernst Flentje.
*589 H. H. Franklin Mfg. Co.
540 Peter A. Frasse & Co.
*274 Gabriel Horn Mfg. Co.
*604 Garage Equipment Mfg. Co.
*529 Gardner Engine Starter Co.
*612 Geiszler Bros. Stge. Bat. Co.
307 Gemmer Mfg. Co.
320 General Electric Co.
501 James L. Gibney & Bro.
*273 Gilbert Mfg. Co.
561 M. S. Gilmer
*271 Globe Machine and Stamping Co.
126 B. F. Goodrich Co.
130 Goodyear Tire and Rubber Co.
427 Gould Storage Battery Co.
129 Gray & Davis.
*267 Gray-Hawley Mfg. Co.
*524 Gray Specialty Co.
*626 Emil Grossman Co.
*564 Hall-Thompson Co.
*525 Hardman Tire and Rubber Co.
*528 F. A. Hardy & Co.
134 R. E. Hardy Co.
162 A. W. Harris Oil Co.
220A Harrison Radiator Co.
160 Hartford Machine Screw Co.
156 Hartford Suspension Co.
232 Havoline Oil Co.
*282 George A. Haws.
*579 Hawthorne Mfg. Co.
*219 Hayes Mfg. Co.
*270 Heinze Electric Co.
*259 Herz & Co.
305 Hess-Bright Mfg. Co.
*302 Hess Spring and Axle Co.
*262 Hodgman Rubber Co.
189 Hoffecker Co.
588 S. Hoffnung & Co., Ltd.
*622 R. M. Hollingshead Co.
601 Homo Co. of America.
418 H. J. Houpert.
131 Hyatt Roller Bearing Co.
*509 Hydraulic Oil Storage Co.
*575 Ideal Wind Shield Co.
549 Ignition Co.
558 Imperial Bearing Co.
257 International Acheson Graphite Co.
*513 International Metal Polish Co.
*318 Jackson Church Wilcox Co.
252 Jacobson-Brandow Co.
173 Janney-Steinmetz & Co.
*567 Jeffery-Dewitt Co.
547 J. M. Shock Absorber Co.
284 Isaac G. Johnson & Co.
137 Phineas Jones & Co.
143 Jones Speedometer.
*201 Kellogg Mfg. Co.
†564 W. J. Kells Mfg. Co.
598 Keystone Lubricating Co.
*613 K. W. Ignition Co.
*428 Wm. R. Laidlaw, Jr.
231 Leather Tire Goods Co.
225 Lee Tire and Rubber Co.
590 Lefever Arms Co.
133 Light Mfg. and Foundry Co.
229 Link Belt Co.
226 Lovell-McConnell Mfg. Co.
151 McCord Mfg. Co.
*280 McCue Co.
522 F. T. McGinnis.
*276 Manufacturers Foundry Co.
537 Marburg Brothers, Inc.
553 Mead Engine Co.
548 Merchant & Evans & Co.
*421 Metal Stamping Co.
*520 Meteor Auto Tank Co.
135 C. A. Mezger, Inc.
228 Michelin Tire Co.
161 Charles E. Miller.
*618 William P. Miller's Sons.
562 Modern Auto Appliance Co.
*565 Morrison-Ricker Mfg. Co.
180 A. R. Mosier & Co.
*581 Frank Mossberg Co.
*617 Motor Car Equipment Co.
234 Motz Tire and Rubber Co.
239 Munice Gear Works.
*616 L. J. Mutty Co.
598A Mutual Auto Accessories Co.
411 Narragansett Chemical Co.
*415 George Nash Co.
*621 Nathan Novelty Mfg. Co.
132 National Carbon Co.
*263 National Coil Co.
*242 National Rubber Co.
139 National Tube Co.
223 New Departure Mfg. Co.
*426 New Jersey Car Spring and Rubber Co.
539 Newmastic Tire Co.
591 New Miller Mfg. Co.
*624 New York Coil Co.
141 N. Y. and N. J. Lubricants Co.
251 New York Sporting Goods Co.
561 New York V-Ray Sales Co.
585 Niagara Lead and Battery Co.
*278 Noera Mfg. Co.
*514 A. S. Noonon Tool and Mach. Wks.
*517 North East Electric Co.
*319 Northway Motor and Mfg. Co.
172 Oliver Mfg. Co.
*221 Pantasote Co.
416 Paragon Auto Parts Mfg. Co.
147 Pennsylvania Rubber Co.
542 Perfection Spring Co.
*403 Perfect Window Regulator Co.
†565 Philadelphia Stge. Bat. Co.
*316 G. Piel Co.
167 Pittsfield Spark Coil Co.
*568 Polson Mfg. Co.
*570 Prince Tire Co.
599 Thomas Prosser & Son.
146 Remy Electric Co.
148 Republic Rubber Co.
543 Rhineland Machine Works Co.
*424 P. Reilly & Son.
*623 Riley-Klotz Mfg. Co.
*615 R. I. V. Co.
*279 Rose Mfg. Co.
†314 Ross Gear & Tool Co.
238 Royal Equipment Co.
*285 Rushmore Dynamo Works.
290 Russian Tire Co.
*269 J. H. Sager Co.
535 S. & S. Shock Absorber Co.
*614 S. B. R. Specialty Co.
*275 Seamless Rubber Co.
*264 C. A. Shaler Co.
*512 Shawmut Tire Co.
534 Sheldon Axle Co.
557 Simonds Mfg. Co.
504 S. K. F. Ball Bearing Co.
149 A. O. Smith Co.
*429 Grant E. Smith.
535A Smith Gasoline Meter Co.
554 Sonora Motor Horn Co.
*521 L. Sonneborn Sons, Inc.

Floating Axle Patent Suit Dismissed

Thomas J. Lindsay and William Harmon Drop Prosecution of National Motor Vehicle Co. of Indianapolis for Alleged Infringement—Description of Device Which Started Litigation

*312 F. W. Spacke Machine Co.
308 Sparks-Withington Co.
*584 Sphinx Motor Co.
168 Spicer Mfg. Co.
128 C. F. Splitdorf.
*301 Sprague Umbrella Co.
*224 Springfield Metal Body Co.
163 Standard Roller Bearing Co.
247 Standard Thermometer Co.
*582 Standard Tire and Rubber Co.
*527 Standard Tire Protector Co.
177 Standard Welding Co.
*583 John T. Stanley.
*405 Star Speedometer Co.
306 Start-Lite Co.
*571 Culver Stearns Mfg. Co.
*286 Stein Double Cushion Tire Co.
*619 Stevens & Co.
227 Stewart & Clark Mfg. Co.
235 Stromberg Motor Devices Co.
254 Stutz Auto Parts Co.
171 Swinehart Tire and Rubber Co.
246 Texas Co.
538 Andrew C. Thompson Auto Co.
166 Timken-Detroit Axle Co.
165 Timken Roller Bearing Co.
*407 Charles O. Tingley & Co.
†313 Torbenson Gear & Axle Co.
536 Joseph Tracy.
230 Treadwell Engineering Co.
*508 Troy Carriage Sun Shade Co.
*620 Tryon Auto Pump Co.
*511 Charles H. Tucker Co.
*523 Tucker Tool and Machine Co.
158 Turner Brass Works.
*414 Typhoon Signal Co.
*610 Union Auto Specialties Co.
315 United Rim Co.
*532 U. S. Auto Horn Co.
144 United States Light and Heat Co.
124 United States Tire Co.
*507 United Steel Co.
†309 United Steel Co.
188 Vacuum Oil Co.
*272 Valentine & Co.
311 Vanadium Metals Co.
409 Van Auken Indicator Co.
*625 Vanguard Mfg. Co.
123 Veeder Mfg. Co.
*412 Velox Polish Mfg. Co.
*268 Vesta Accumulator Co.
*303 Voorhees Rubber Mfg. Co.
*580 Warburg Rim Co.
*574 Ward Leonard Elect. Co.
176 Warner Gear Co.
150 Warner Instrument Co.
236 Warner Mfg. Co.
430 Wasson Piston Ring Co.
550 Wayne Oil Tank and Pump Co.
142 Weed Chain Tire Grip Co.
*530 Westen Mfg. Co.
170 Weston-Mott Co.
*289 Western Tool and Forge Co.
145 Wheeler & Schebler.
*288 White & Bagley Co.
179 Whitney Mfg. Co.
*283 Willard Storage Battery Co.
*420 C. A. Willey Co.
175 J. H. Williams & Co.
*425 William R. Winn.
*313 Wolverine Lubricants Co.
153 O. W. Young.

* Indicates will exhibit in Part I only.
† Indicates will exhibit in Part II only.
No asterisk or dagger indicates will exhibit in Parts I and II.

MORE KLAXON SUITS

New York, Dec. 11—The Lovell-McConnell Mfg. Co., of Newark, N. J., filed suit December 2 in the United States circuit court of the southern district of New York for alleged unfair competition and imitation of its Klaxon warning signals by the American Ever Ready Co., and also for infringement of the Klaxon basic patents, Nos. 923,048, 923,049 and 923,122, granted May 25, 1909. Other suits are being prepared for alleged infringement of Klaxon patents, Nos. 956,898 and 957,161, granted May 3, 1910; and also of Klaxon design patents, No. 39,785, granted January 19, 1909, and No. 39,801, granted February 2, 1909.

INDIANAPOLIS, Ind., Dec. 11—The dismissal of the bill of complaint in the United States circuit court in the case of Thomas J. Lindsay and Willard Harmon, complaintants against the National Motor Vehicle Co., terminates an important suit affecting the industry. The complainants in this cause sought to establish for themselves and their exclusive licensee, the Timken Axle Co., of Detroit, a monopoly of the rights to manufacture, use and sell rear axles for motor cars of the type known as the floating axle.

The floating axle consists of a hollow axle or housing, with an enlargement in the center, called the gearcase and with journals on the outer ends, upon which the rear wheels of the vehicle are mounted. The hollow axle thus carries the load of the vehicle. In the gearcase of this hollow axle mounted upon bearings is the differential, or, as it is sometimes called, the compensating gear, a device which enables one of the rear wheels to run faster than the other when turning a corner and through which motion is imparted to the rear wheels or traction wheels at unitary speed when the vehicle is going straightaway. There are live-axle shafts inside the hollow axle, which at the inner ends on each side are mounted in the bevel gears of the differential and at the outer ends are fastened with a claw-clutch to the wheel hubs. These live axles are said to float because they have no bearings other than a positive connection with the differential at one end and the wheel hubs at the other, hence the name floating axle.

The differential has a spur-gear which is engaged by a pinion on the rear end of the driveshaft. As the engine turns the driveshaft the pinion and spur-gear turn the differential, which in turn rotates the live axle and the wheels fastened to their outer ends. The complaintants brought this suit upon two patents, No. 612,360, dated November 11, 1898, and No. 748,760, dated January 4, 1904, issued to Lindsay and Harmon. Patent No. 612,360 is for a motor vehicle and purports to cover the construction of an entire vehicle, but in this case the only part under consideration was the rear axle. The three claims of the patent with some variations of language claimed substantially "the combination in a vehicle, with a suitable motor and the vehicle frame, of a tubular axle casing on said frame inclosing the driven axle, and having wheel supports on its outer ends, wheels mounted on said wheel supports the hubs whereof contain internally-toothed gear-rings, and an axle within said tubular axle casing, and having

SIDE VIEW OF GARDEN

pinions on its ends which engage with said gear-rings."

Patent No. 748,760, purported to be a "driving-axle structure for motor vehicles," which is the rear axle, and while the three claims in the suit differ somewhat, the substantial claim was "In a motor-driven vehicle, the combination, with a pair of tubular axle structures, of a pair of casing sections connecting the adjacent ends of said tubular-axle structures, and one of said casing sections being detachably connected, a pair of shaft sections revolubly mounted in the tubular axle structure and projecting into the casing sections, an axially separable driving connection between the shaft sections from which the shaft sections may be outwardly axially withdrawn, and independent means for normally retaining the shaft sections against axial displacement, said means being removable to permit the outward withdrawal of each shaft section from the structure."

The complainants contended that the defendants used the mechanism of the two patents conjoined in one rear axle so that both patents were infringed. They sought to have the court hold that the function performed by the pinions on the ends of the live axles and the internal gears in the wheel hubs, which parts were not to be found in the defendant's rear axle, was transferred to another part of the vehicle, and the defendant claimed that it had discarded these parts and their functions so that there was no infringement, even if the earlier patent was valid. It denied that there was any novelty in the second patent. The record was very voluminous.

Big Rally of Nebraska's Enthusiasts

Name of Cornhuskers' State Association Changed and Good Roads Included in Title—Convention Pledges Itself to Work Hard for Better Highways—Sixty-Five County Organizations

OMAHA, Neb., Dec. 11—The first convention of the Nebraska Automobile Association, or as the official name is now, the Nebraska Automobile and Good Roads Association, was held in Omaha last week. About 100 delegates from sixty-five county associations were present to assist in the permanent organization of the state club at the 2-day session at the Rome hotel. The theme of good roads in Nebraska was emphasized just as strongly throughout the whole convention as motor topics.

The state association is only 9 months old. It was organized on a call of the Omaha Motor Club in February, 1911, during the show. Seven clubs sent delegates, but only three clubs, the Nebraska City, Fremont clubs and Omaha clubs joined at that time. Then there were only a few local clubs in the state. Active work was begun shortly, Secretary D. E. Watkins starting on tours over the state. Now there are sixty-five county organizations, and about 3,500 members. As there are 20,000 motorists in this state, it is planned to attempt to triple this number by the time of the second annual convention.

The convention last week was for a reorganization from the little start made in February. The emphasis that is being laid on good roads was indicated by the fact that early in the convention the name of the organization was changed to the Nebraska State Automobile and Good Roads Association, and its purpose was set forth as "to promote the building and maintenance of good roads and to co-operate in securing national legislation and the enactment and enforcement of proper ordinances and legislation governing the building and maintenance of better roads and governing and protecting the owners and users of motor vehicles."

While originally the membership was confined to car owners, it was opened to any person in the state interested in the subject of good roads.

The association will attempt to secure the enactment of those features of the proposed road laws, recommended by the State Good Roads Association, but defeated at the last legislature, and to make the appointment or election of a county road superintendent compulsory. The last legislature passed a law which left it optional with counties.

The club indorsed the proposition of having a state highway commissioner to have general supervision over the construction of highways and bridges in the state. It also indorsed the Lincoln memorial highway proposition and other federal aid for good roads.

At a banquet given by the Omaha Motor Club to the delegates the first evening Governor Aldrich was the principal speaker, and in his address he urged the use of convict labor on public roads in the state as one of the solutions of better highways. Mayor Dahlman welcomed the delegates, and John C. Cowin, of Omaha, was toastmaster. Leaders in all the state road associations were on the toast list, and the theme of the evening was systematic good roads building.

Those speaking were: Mayor George Wolz, of Fremont; L. M. Talmage, Grand Island; John Dorgan, Lincoln; J. E. Davis, Sutton; Rome Miller, Omaha; T. H. Pollock, Plattsmouth; Dr. A. P. Overgaard, Fremont; C. L. Gould, Omaha; F. H. Clark, Columbus, and J. M. Prime, Oxford.

The second day the following officers and directors were elected: President, Dr. A. P. Overgaard, Fremont; vice-presidents, I. E. Doty, of David City, J. M. Prime, of Oxford, and L. M. Talmage, of Grand Island; secretary, D. E. Watkins, of Omaha; treasurer, E. R. Wilson, Omaha. Directors, John T. Swan, Auburn; Lee Huff, Omaha; A. P. Overgaard, Fremont; I. E. Doty, David City; H. E. Erickson, Holdredge; J. T. Dorgan, Lincoln; W. J. Kirkland, Omaha; Fred W. Ashton, Grand Island, and Fred J. Bell, of Ord.

W. D. Hosford was selected as the representative on the American Automobile Association board and designated as the delegate to attend the national convention. D. S. Dalby, of Beatrice; Judge Epperson, of Clay Center, and Fred W. Ashton, of Grand Island, were named members of the legislative committee.

Grand Island and Lincoln were both contenders for the next convention, Lincoln winning. It will be held in the capital city next November.

DELEGATES IN ATTENDANCE AT NEBRASKA MEETING

NEW HAMPSHIRE ROAD PROGRAM

Concord, N. H., Dec. 11—"My good roads program for the future," said Governor Bass today, "is as follows: To complete the three trunk highways as far as the available funds will go and to build roads for such price as we can afford which will withstand the heavy motor traffic. We are now seeking the best method of taking care of the highways. Where there is constant motor traffic it would seem from our experience, and that of other states, that a system of patrol is the most effective way of dealing with the question. This means that the state will pick out the most efficient men to be obtained along the route of these trunk lines and put each man in charge of 8 or 10 miles of road. Each patrolman will be responsible for the highway under his care and will be expected to work constantly during the months of heavy travel in keeping his section of the road in first class condition. The idea is to make repairs as soon as any weakness shows itself and before any serious damage develops.

"In this connection let me add that I have instructed the state engineer to include an oiled surface in the first cost of construction of all new trunk line work where the traffic is heavy. It has been clearly shown that a surface binder is necessary even on the best macadam roads to withstand heavy motor travel, consequently no roads should be considered finished until such a binder is applied."

MEETING NEEDS OF ROAD USERS

Newton, Mass., Dec. 9—Street Commissioner Charles W. Ross, of Newton, formerly a member of the state highway commission, who has been building roads for more than a quarter of a century has come to the conclusion that it is about time that the taxpayers in various municipalities were informed that motor cars are not so

very destructive on highways as many people imagine. He says the future may see separate roads for motor cars and horse-drawn vehicles on a larger scale than is now in evidence, he having divided traffic that way on some of the Newton roads with good results. Speaking of maintenance he says:

"Great care should be taken in getting a census of traffic over a road before it is decided what material to use on the highway. If the motor cars seem to be in the majority a much harder surface can be used than if the traffic is evenly divided between horses and motor vehicles.

"If a large percentage is in favor of the horse-drawn vehicles the road should be treated in a way so that the horses can travel over it in safety at all seasons of the year. By careful study of the different kinds of traffic the road builder can better determine what he needs than if he guesses at it. To resurface an old, worn out macadam road is not a very expensive job. Many experiments have been tried and I find that by spiking up the old road, putting on 2 inches of stone that will pass through the 2-inch screen, then covering with a heavy asphaltic oil preparation, and again covering it with a very light treatment of oil and putting on the fine screened stone the results are good.

"This can be done at a cost of from 20 to 25 cents a square yard. This is not an exorbitant price for such a surface on an old macadam road, and in a period of 3 years it will be much cheaper than the ordinary water-bound macadam. I merely give these facts to show that it is not a hardship on the taxpayer to have a proper surface on the roads and thereby dispel the illusion that many entertain about expeusive road building."

TAFT RECEIVES WILBY

Washington, D. C., Dec. 9—President Taft today gave an audience to Thomas W. Wilby, pathfinder of the Touring Club of America, and Mrs. Wilby, who arrived in Washington yesterday on the final stage of a double transcontinental tour, which started from New York the last week in August. Mr. and Mrs. Wilby were presented to the president by Leroy Mark, manager of the southeastern department of the Touring Club of America.

President Taft manifested great interest in Mr. Wilby's account of the trip across the continent and back. Commenting on the great influences at work to improve the country's highways, the president said good roads stood for the social and moral uplift of the nation.

Later in the day Mr. and Mrs. Wilby were introduced to Speaker Champ Clark and a number of congressional leaders, who evinced lively interest in the trip now nearing completion. An Ohio car, driven by Fred Clark, is being used by Pathfinder Wilby. The party will leave for New York Monday, arriving there about the middle of the week.

Reports on Roads to President Taft

Secretary of Agriculture Wilson Points Out That United States Is in Midst of National Readjustment as Regards Highways—Radical Departure from the Old Methods Noted

WASHINGTON, D. C., Dec. 11—In his annual report to President Taft, the secretary of agriculture, James Wilson, devotes considerable attention to the subject of good roads. He points out that the United States is in the midst of a national readjustment with regard to road improvement. The rapidly changing traffic conditions have necessitated equally radical departures from the old methods of road construction and maintenance. Methods which but a few years ago were considered entirely satisfactory and firmly established, both in theory and practice, are now often found to be entirely inadequate. In road administration, the secretary points out, the old principle of extreme localization is fast giving way to new systems involving the principle of centralization and fixed responsibility. A great deal of careful scientific, as well as educational, work is needed to solve correctly the many difficult problems which have arisen in regard to the administration, construction and maintenance of the public roads. This work should prove of the greatest value to the whole country.

The following excerpts are from Secretary Wilson's report:

"The questions which confront road builders vary greatly with local conditions. Instruction in the art of road building to be of real practical value must be adapted to the peculiar conditions of each locality. Such instruction is given by the office of public roads through the medium of object-lesson roads, built at local expense. During the past year roads were built in fifty-two places, involving an expenditure of approximately $120,000. When it is considered that each of these fifty-two object-lesson roads constitutes a practical school of applied road building, it must be evident that this feature of the department's work is a powerful factor in the great nation-wide movement for the betterment of our public roads.

"In the routine testing and examination of road materials great progress has been made along established lines. Investigation of the problems of dust prevention and road preservation has occupied much attention during the year.

"An investigation completed during the year shows that the total road mileage of the United States, exclusive of Alaska and insular possessions, is 2,210,857 miles, of which only 187,910 miles, or 8.49 per cent of all our roads, are improved. The increase in the mileage of our improved roads during the 5-year period 1904-1909, has been 34,379 miles."

MAKING IT EASY FOR OWNERS

Philadelphia, Pa., Dec. 9—Clarence W. Cranmer, who has been acting secretary of the Quaker City Motor Club for the past month, was this week chosen permanently for the position, succeeding A. T. James, resigned. Through a special arrangement the club has put on sale owners' license tags for both Pennsylvania and New Jersey for 1912. Philadelphia motorists, by reason of the non-existence of reciprocity with the state of New Jersey, would under ordinary circumstances be compelled to take out a Jersey license upon landing on the other side of the Delaware river, not always an easy thing to do in a short time, consequently this new idea of the organization will eliminate considerable bother and loss of time by enabling the Pennsylvanian to secure the license before reaching Camden.

PATHFINDER WILBY AND OHIO MUDHEN AT WHITE HOUSE

Japan Formally Introduced to the Motor

A PUNCTURE CAUSES A STOP. NOTE CONDITION OF ROAD. THIS IS 25 MILES OUT OF TOKIO AND BETWEEN VILLAGES

TOKIO, Japan, Oct. 30—With the initial club run under the auspices of the initial motor organization in Nippon, Japan became yesterday a fair field for the development of motor usage. The preliminary work of introduction has been accomplished. The means of advancing the power vehicle propaganda in Japan seems to have been secured in the Nippon Automobile Club. It now rests with the ingenious sales manager of foreign countries, and especially America, to occupy the advantage that has been a long time in materializing.

Months and months of hard work have been required to get the Nippon Automobile Club into proper shape, and to none more than E. W. Frazar, who has been selling rings around the European machine representatives with his Ford line, is the credit of having interested the progressive men of the government and commercial circles in Japan due.

The First Club Run

The first motor club run ever held in Japan took place on Sunday, October 29. There were thirty-seven cars in line when the party moved out of the parade ground in Hibiya park and turned toward the mountain range to the west of the capital. It had been announced that the run would start at o o'clock. The morning was cold, raw and rainy, and the few who gathered at the park clubhouse were downcast at the prospects. It was decided that those who had come early would make the trip, even if no others

EDITOR'S NOTE—This is a most remarkable story of the first club run in Japan, written for Motor Age by F. P. Haight of the Tokio Advertiser, which gives Americans a true light on motoring conditions in the flowery kingdom

By F. P. Haight

came, but in the midst of the discussion a straggler glided in at the park gate, then another and another, until twenty-five were ranged in line ready to draw lots for position.

The same experience was later reported by the members of the club at Yokahama, who joined the Tokio contingent twelve strong at a junction of roads in the suburb of the capital. Through some considerate impulse of Providence the overcast sky was swept clean at the moment the lots for places in the line were drawn, and the rickshaw-tamped streets steamed in the sun a moment later.

In casting up the units of the party at the start it was found that America was represented by six Ford machines and one Hupmobile out of thirty-seven. The others were of European make, Italian, English and German, and ranging from the 100-horsepower Fiat racer, driven by young Kihickiro Okuro, down to the one-lunger of English construction of the vintage

of 1896. Nevertheless this varied exhibit brought to the roadsides fully 100,000 natives, who caught glimpses of the cars over a distance of 35 miles and return.

The Nippon club has among its membership several influential members of the diet, the minister of finance, Mr. Yamamoto, a count or two, some barons and members of the imperial household. Through this contingent it was possible to secure a governmental edict to the prefectures which were along the route that made arrangements for the journey comparatively easy.

5,000 Cops Guard Route

Fully 5,000 policemen guarded the route and held back the curious dwellers of the rural districts and prevented, no doubt, many tragedies, for the Japanese coolie is just curious enough about a motor car to stand in the path of it until he is struck to ascertain whether it really has the power attributed to it in his mind by a view of its progress. In this connection it may be well to say that no spectator was injured in the run, which is a fortunate thing for the motor car industry in Japan.

Young Okura's racing car was the pathfinder for the party, although the ground had been thoroughly gone over 2 days before. It was thought just as well, however, to let the leader be one who bore one of the most influential names in Japan. Okura fairly bounced out of the park, and with a screech of his siren, which was continuous for the distance

of the run, let his machine out through the crowded streets of Tokio at easily 50 miles an hour—notwithstanding the 8-mile regulation. What he saw along the roads we do not know, but we do know that when we came along there was a respectful distance between the car path and the lines of stolid brown coolie faces.

Okura had the misfortune to splatter mud on a perfectly innocent policeman who was helping to make our day for us, and was reported to the prefecture. He received a note next day and, I believe, apologized, blaming it upon his uncontrollable car. We learned upon arriving at Mount Takao that the racer had covered the 35 miles in 50 minutes.

Beauties of a Japanese Morning

Such a run might seem ill-advised or foolish to a person who never has seen better roads than Sheridan road, Riverside drive, or Ocean drive. But upon a moist, warm, drowsy Japanese morning, with roads as smooth and dustless as a well-brushed billiard table carved out ahead of you to a vanishing point in the groves of the foothills; with miles of bright green and black truck gardens at either side; and then hedges of mulberry bushes lining your road for miles further; with almost 20 miles of straightaway race track, and with that track just damp enough to hold the dust—and added to all these the superb scenery of the approach to Fujiama and Takao, and it really depresses the discretionary bump to such a degree that you would speed if in a wheelbarrow.

Under these conditions the first club run was made. Through the city and suburbs of Tokio the line proceeded, just as the last puddles were disappearing in

the streets. The cars rolled along through lanes of humanity, their occupants being greeted with a banzai here and there; a kiss from a handcart man, who with his burden had been set off the track by a policeman; a titter of laughter from the young girls, who gathered in bashful groups to view the innovation.

Aged men and women watched with open mouths the smoothly moving cars as they passed, some striking their brows or shaking their heads in doubt as they saw what they could not believe. Of the 100,000 estimated in the crowd of spectators, there were perhaps 5 per cent who had seen a motor car before.

Once outside the city the real joys of the ride began. The day had turned out to be one of those ideal Japanese days which correspond with the day borne in mind by the author of "What is so rare as a day in June." Through the quaint inland villages, traveled even nowadays by a few white men, past miles of luxuriant flower and vegetable gardens, along village streets which had on either side ditches to lead the mountain brook waters to their lumbering old water wheels which lined the curbs, the party rolled.

A telegraph wire had been tapped at Hachioji to secure news of our approach, and the housetops and trees were crowded with a miscellaneous collection garbed in the most picturesque variety of kimonos ever gathered under a single management.

There were a few tire accidents, and as it is a national trait of the Japanese to be careless regarding detail, one or two ran out of gasoline on the road. But nothing of a very troublesome character occurred in the 70-mile jaunt.

Toward the westward end of the journey a trip was made across the rickshaw and handcart bridges constructed of bamboo in low-water periods. These bridges are 5 feet 6 inches wide, with a strip 2 inches wide at either side. Our car just took the inside of this primitive rail, but we passed three of the bridges without mishap, coming and going.

Lunch at the Temple

Arriving at the foot of Mount Takao those of the party who could do so walked to the temple at the summit of the mountain, some 3,000 feet, through winding, wooded and sometimes almost perpendicular paths; others rode in sedan chairs. At the temple luncheon was served in Japanese fashion, all being seated upon cushions, the legs and feet of the foreign men and women "going to sleep" promptly and causing inattention to the repast, while the native members satisfied appetites which had been well developed by the climb.

In a short speech Mr. Yamamoto assured the foreigners that the motor car had come to stay in Japan and that one of the principal objects of the organization was to promote motoring conditions here which will attract makers and dealers as well as tourists. The return was made in a little more than an hour and arrangements for monthly jaunts were talked over.

As a matter of fact the motor situation in Japan has taken on a brighter glint

CARS PARKED ON PICTURESUE KNOLL AT FOOT OF MOUNT TAKAO

since it was learned that a member of the imperial household probably would appear soon in a car. The industry has been held back to a great extent by the national prejudice in favor of rickshaws and man-hauled drays.

Progressive and enterprising in many things the Japanese as a nation, the Japanese are vastly in arrears of even China in the general adoption of labor-saving and power and speed-producing devices. Once it is comprehended that the rickshaw man and handcart puller will not be deprived of means of livelihood by the introduction of cars an injurious prejudice will be wiped out. The government has started to do this, and by engaging thousands of Japs upon road improvements is showing the lower classes the benefit of the coming motor car.

National Problem in Japan

This may seem far-fetched, but it is a national problem in Japan. As an instance, a friend who thought to relieve his houseboy of the tedious and tiresome task of hauling water from his well with a bucket fastened to a bamboo rod, had a small rotary pump installed. A few days later it was found to be out of order. Investigation showed that the valves had been cut and mutilated, and later it was discovered that the houseboy, believing the innovation might cost him his place, had put the pump out of commission. He was not convinced when he was told that his place would be permanent. He begged so hard to be allowed to draw water in the old way that the pump was discarded.

In this connection there is contained a valuable hint. It means that Japan will not manufacture motor cars for many years to come, and that it will have to buy from outside. Until students have learned to make cars abroad and can return to train workmen here to do the work, no cars will be made in Nippon. Tariffs, licenses and prejudice will prevent foreigners from bringing foreign workmen here to make cars. So, until the industry is developed here, the field is open to the world. The government has lowered the duty on motor cars with the advance of interest, and while it took 6 years to put six cars into Tokio, a city of 2,000,000, within the past 8 months there have been 141 cars disposed of in the capital.

ACCIDENT IN INDIANAPOLIS

Indianapolis, Ind., Dec. 11—On the afternoon of December 6 a reinforced concrete building under construction in Indianapolis for the Prest-O-Lite Co., collapsed, seven men being killed and one man so seriously injured he died later, besides nineteen men being more or less seriously injured. The company had not yet accepted the building from the contractors and an investigation is being conducted to place the blame. The building was to have been used as a factory for the new Prest-O-Lite self-starter.

FORD CROSSING JAPANESE BRIDGE 4 INCHES WIDER THAN CAR'S TREAD

Government Investigates Lubricants

Expert Warns Against Use of Soap in Quantity, Rosin and Asphalt and Thinks Sunlight and Air Should Be Avoided in Manufacture of Mineral Oils—Other Data Given Out

WASHINGTON, D. C., Dec 11—Lubricants containing soap in quantity, rosin and asphalt, or which have been exposed to the action of sunlight and air are to be avoided, it appears from an investigation of the effect of added fatty and other oils upon the carbonization of mineral lubricating oils conducted by C. E. Waters, associate chemist of the bureau of standards, department of commerce and labor, whose conclusions are transmitted today to Secretary Nagel by Director Stratton.

Mr. Waters states that in a paper in bulletin 7, of the bureau of standards, he called attention to the fact that two straight mineral oils under investigation yielded more carbonized matter, insoluble in petroleum ether, when they were heated in brass tubes than when they were heated in glass tubes of the same dimensions. The reverse was true of a third oil having a saponification number indicating the presence of .5 per cent of fatty oil. This naturally suggested the advisability of determining the amount of carbonization of a straight mineral oil and of the same oil with known amounts of other constituents, such as lard oil, rosin oil, tallow, etc., added. Tests confirmed the previously made statement that the insoluble precipitate is an oxidation product.

In his discussion of results Mr. Waters states that in considering the percentages of insoluble obtained on heating any given sample of oil, it is evident that there are causes of variation that may or may not be capable of elimination. An electrically-heated bath is now being made to obviate air currents as a source of variation and also irregular heating. There is no apparent connection, he states, between the amounts of insoluble, evaporation and varnish. As to catalytic action, influencing the amount of insoluble, which was hinted at in this earlier paper, a tabulation of the present results fails to give any certain evidence of it.

The government expert also states that the addition of various oils and other substances to a straight mineral oil affects the amount of carbonization, as measured by the percentage of precipitate thrown out by petroleum ether, in various ways The addition of a small amount of ferric oxide to a straight mineral oil greatly increased the amount of carbonized matter formed. It is not impossible that the fine metallic powder resulting from the wearing of the piston and cylinder walls may become oxidized and then further the carbonization of the lubricant. He then advises as to the avoidance of lubricants. He warns against the conclusion, from low results obtained with mixtures containing tallow, lard oil, etc., that the addition of these oils is to be endorsed.

The presence of the fatty acids resulting from the decomposition of the oils may greatly increase the corrosion of the cylinder and in actual practice cause as much carbonization as the direct addition of ferric oxide would do.

REPAIR CAR ON JAPANESE CLUB RUN

Exports and Imports During October

Government Finds Business Twice as Good as In Corresponding Month Last Year—More Machines Than Usual Received Into the Country—Shipments Abroad Total 952 Motor Cars

WASHINGTON, D. C., Dec. 9—Exports of motor cars during October last were nearly double those of the corresponding month of last year, according to the latest compilations of the government's statistical bureau. The shipments abroad during October last numbered 952 cars, valued at $1,043,093, as against 539 cars, valued at $647,785, exported in October a year ago. Exports of parts, except tires, rose in value from $123,854 in October, 1910, to $313,291 in October last. During the 10 months ending October exports of cars increased 7,011, valued at $9,521,851, in 1910, to 12,196 cars, valued at $12,608,127, in 1911. During these periods the exports of parts, except tires, increased from $1,669,787 to $2,736,550.

The detailed shipments of cars during October and the 10 months ended October were as follows:

OCTOBER

Exported to—	No.	Value
United Kingdom	213	$ 237,109
France	14	19,582
Germany	5	5,744
Italy	6	3,782
Other Europe	52	33,892
Canada	193	277,624
Mexico	23	39,580
West Indies and Bermuda	23	21,195
South America	102	100,066
British Oceania	262	248,985
Asia and other Oceania	42	35,262
Other countries	17	20,272

TEN MONTHS

Exported to—	No.	Value
United Kingdom	2,776	$2,407,373
France	366	413,030
Germany	95	112,126
Italy	167	192,339
Other Europe	685	635,378
Canada	4,300	4,770,911
Mexico	210	351,007
West Indies and Bermuda	236	270,994
South America	766	967,358
British Oceania	1,729	1,602,383
Asia and other Oceania	645	647,067
Other countries	221	238,161

For the first time in many months imports of cars took a jump, the number increasing from fifty-nine, valued at $125,919, in October, 1910, to 103, valued at $207,059, in October last. Imports of parts likewise increased from $23,409 to $31,398. During the 10 months' period, however, the imports declined in number and in value. During the 10 months of 1910 the number of imported cars was 868, valued at $1,749,059, while during the same period of this year the number was 773 and the value $1,657,281. Imports of parts fell from $615,189 to $266,992 during the periods under consideration.

Cars were imported from the following countries during October and the 10 months ended October:

OCTOBER

Imported from—	No.	Value.
United Kingdom	22	$ 54,054
France	35	67,896
Germany	16	34,738
Italy	15	23,449
Other countries	15	26,922

TEN MONTHS

Imported from—	No.	Value.
United Kingdom	127	$305,531
France	262	567,665
Germany	129	280,385
Italy	100	159,188
Other countries	155	344,512

GEORGIA MAKES AWARDS

Atlanta, Ga., Dec. 7—The awards in the tour around Georgia, which virtually ended in Atlanta December 2, have just been made public. The reason for the delay was the fact that while most of the cars finished in Atlanta a few which joined the tour on the first, second and third days of the run had to go back to their starting points before they completed the circuit and no awards could be made until all had finished and until all the checkers' reports had been mailed to the referee.

The two special prizes offered for consistent running and for sticking most closely to the time card were awarded by Referee Connally. First prize was given to the Velie roadster, entered from the Atlanta Velie branch, while the second prize went to the Flanders team. The hard luck cup had previously been awarded on a vote of the contestants to W. G. Southerlin.

The other prize winners, the entrant and the amount of prize money received, follow:

CLASS A, $2,500 AND OVER

No. 3—Dr. J. C. Luke, Ocilla, Ga., Ohio, $108.33.
No. 15—T. C. Lauren, Atlanta, Packard, $108.33.
No. 21—Frank G. Corker, Dublin, Ga., White Gas, $108.33.
No. 23—Dolph Walker, Atlanta, National, $108.33.
No. 37—Evelyn Harris, Atlanta, Thomas Flyer, $108.33.
No. 53—Muckalee Cigar Co., Americus, Ga., Marmon, $108.33.

CLASS B, $1,600 TO $2,500

No. 1—Atlanta Ad Men's Club, Imperial, $50.
No. 2—Ohio Motor Car Co., Cincinnati, Ohio, $50.
No. 5—Jake W. Paulk, Ocilla, Ga., Ohio, $50.
No. 11—Atlanta Chamber of Commerce, Cole 30-40, $50.
No. 19—Velie Motor Vehicle Co., Atlanta, Velie, $50.
No. 22—Sam Bashinski, Dublin, Ga., Chalmers 30, $50.
No. 28—U. S. Fuller, Culloden, Ga., Cadillac, $50.
No. 31—W. A. Ayash, Americus, Ga., Overland, $50.
No. 36—G. W. Varn, Valdosta, Ga., Cadillac, $50.
No. 40—F. G. Edwards, Albany, Ga., Chalmers, $50.
No. 43—W. B. Cummings, Atlanta, Buick, $50.
No. 46—Gulf Refining Co., Atlanta, Mitchell, $50.
No. 60—B. T. Bowers, Canon, Ga., Case, $50.

CLASS C, $1,000 TO $1,600

No. 6—W. E. Sawyer, Americus, Ga., Overland, $130.
No. 14—Miss Regina E. Rambo, Marietta, Ga., Overland, $130.
No. 30—Holmes Brothers, Culloden, Ga., Buick, $130.
No. 42—Steve R. Johnston, Atlanta, Buick, $130.
No. 56—Trio Laundry, E. H. Wilson, Atlanta, E-M-F, $130.

CLASS D, $1,000 AND UNDER

No. 33—E-M-F Co., Atlanta, G. W. Hanson, manager, Flanders, $162.50.
No. 34—E-M-F Co., Atlanta, G. W. Hanson, manager, Flanders, $162.50.
No. 35—E-M-F Co., Atlanta, G. W. Hanson, manager, Flanders, $162.50.
No. 48—Georgia Motor Car Co., Atlanta, Liberty-Brush, $162.50.

McCORD BUYS PRECISION STOCK

Detroit, Mich., Dec. 12—The McCord Mfg. Co. of Detroit has acquired the materials, patents and good will of the Precision Appliance Co. of Chicago and hereafter will manufacture the various types of Hill-Precision lubricators and oiling devices heretofore manufactured by that company, in connection with the McCord lubricators. The McCord company also is now manufacturing a cellular radiator in connection with its tubular type. To accommodate this increase in its business it has just finished an addition of 12,000 square feet to its factory building and 4,000 square feet to its foundry.

COMMENTS ON WORM DRIVE

Reader Suggests Lower Gear Ratio for Easier Acceleration

CHICAGO — Editor Motor Age — Much interest has been created of late on the subject of worm drive for touring cars and it seems to me that there is much misunderstanding on the matter. I have followed reports of different tests with worm drive and it would seem to me that where laboratory tests have been conducted they have failed to take into consideration the one great feature of the test, namely, the efficiency of worm drive under heavy load at low speeds. I believe there are two inherent faults in the worm, namely, lack of efficiency at very low speeds with load and a tendency to heat under continual heavy running at high speeds. This statement is not in any wise derogatory to the worm gear as a practical transmitter of power. In a motor car I do not believe the worm is as good for acceleration purpose as the bevel gear and it certainly is not so good when it comes to the matter of coasting. At an average speed of 20 miles per hour I believe that worm drive is just as effective as bevel drive and that it does not consume any more gasoline.

The fact that a worm-driven car will not coast as well as a bevel-driven one has been urged as an objection to the worm, but I cannot see it in this light. Its inability to coast is a most valuable feature because the moment you close the throttle and the application of power is reversed the car is slowed down much as if a brake were used. I have known cases of where a large worm driven car descending a gradient of 1 in 4 with the low speed engaged will scarcely turn the motor over, and a brake would not have to be used at all.

Regarding the tendency of the worm drive to heat when running at constant high speeds and pressures, little is known from actual practice, because it is rarely in ordinary touring that roads are provided where high speeds may be maintained. It is plain, however, that when a worm-driven car is made to average 60 miles an hour for hours at a time, that the lubricant becomes so thin under the heat that the car gives symptoms of loss of power which is due solely to loss in the efficiency of the worm. The worm operates ordinarily at temperatures from 90 to 98 degrees Fahrenheit.

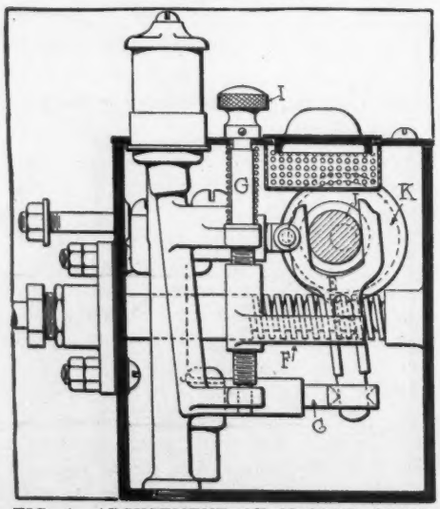


FIG. 1—ADJUSTMENT OF McCORD OILER

It has been suggested that something in the nature of a very heavy lubricant might be used to improve the efficiency of the worm under continued high speeds and great pressures. Castor oil has been used, but it is very difficult to keep it in the differential case because it becomes so thin under the heat. Some drivers have used Prussian tallow mixed with Acheson graphite, thinned with castor oil, and with good results. I would imagine that in our southern states, where the temperature reaches 100 degrees, hard driving might bring difficulties in a short period of time. In such conditions, however, the worm will be much in the same position as the engine and a temperature which would cause the worm to overheat would cause the engine to overheat; or, in other words, the worm would undoubtedly stand whatever the engine would.

Although it has been stated that a worm-driven car will not accelerate so rapidly as a bevel-driven one, I think this can be readily overcome by lowering the gear ratio in the rear axle. With a bevel-driven car when you get below a ratio of 3 to 1 the problem of getting quiet gears becomes troublesome. With the worm there is no difficulty. With the improved motor higher speeds are obtainable, great flexibility is also obtained, and so I believe that with low-ratio worm-driven rear axles you can obtain as much acceleration as with the bevel-driven axle with higher reduction ratio.

One thing manufacturers of worm drive must note is that the first 50 miles on the road of a worm-driven car are very important, as the faces of the teeth upon the worm and gear will wear considerably in this distance. This wear is such as to impregnate the lubricant with bronze filings so that it will resemble, to a certain extent, a bronze paint. The first filling of oil should never be used to exceed a distance of 50 miles before it is removed. The differential housing should be washed out with kerosene and a fresh supply of lubricant put in. The second charge of lubricant should be removed after 200 miles of use. By this time the faces of the worm and wheel will have taken a permanent polish, but without the removal of the bronze filing in the lubricant they will not become smooth and efficient, for the reason that the filings in the oil act as an abrasive material.

The Readers'

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

Irrespective of criticisms that can be placed at the door of worm drive, it is a fact that there are thousands of them in use in Europe and they are giving entire satisfaction. The lubrication of the worm is imperative. I noted in your recent review of foreign cars at the Olympia show that one company had given up the use of worm drive and was returning to bevel drive. I believe the reason for such action can be found in the fact that this company uses a small motor and it would be difficult to have good acceleration in such a car. By using bevel drive better acceleration would be obtained.—Rear Axle.

ADJUSTMENT OF MODEL 14 RAMBLER

Sacramento, Ky.—Editor Motor Age—Kindly answer the following questions through the Readers' Clearing House:

1—I have a Rambler touring car, 1907 model 14, of which the first cylinder misses occasionally, especially after I run about 5 or 6 miles. When the motor is first started all cylinders fire and the motor will go on all right, then this cylinder will begin to miss and finally stop entirely. What is the trouble?

2—Why is it that the spark plugs become so sooted after driving 7 or 8 miles that I have to stop and clean them? Is this caused from too much cylinder oil?

3—Another thing has me puzzled. I bought this car second-hand, and when received it was fitted with jump-spark ignition and a battery. Thinking this was the trouble I purchased a new 6-volt 60-ampere storage battery. There are three wires in the battery box, and two are all I can connect to my storage battery. The remaining one looks as if it was formerly connected to something. When the car arrived the two wires I have connected to the storage battery were connected to six dry cells, and the other one was not connected at all.

4—This car is fitted with a mechanical force-feed oiler on the dash. How is the feed regulated and how many drops per minute should fall?

5—If a few of the small wires in the high-tension cable are broken would this affect the ignition?

6—Should the timer on this car be oiled or packed with grease?

7—Why is it the motor will not run at

Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

high speed when the foot throttle is pressed upon? It will not run much faster when this is done.—G. A. Thornsberry.

1—The probable cause of the missing in the forward cylinder is that you are feeding too much oil to that cylinder, especially in view of the statement that the plugs become fouled in a short time. It may be due to an air leak in the inlet pipe to that cylinder, although there likely would be missing when the motor is first started in that case.

2—This is due to too much oil or too rich mixture, more probably the former.

3—The third wire probably was used to connect a second battery to the switch, to give a dual system, the other side of the second battery being connected by a short wire to the original battery which you replaced. You were correct in leaving it disconnected.

4—The oiler used in this car is a McCord oiler and is illustrated in Fig. 1. The pumps are driven by an eccentric J, and adjustable lever E by means of a worm gear K. The stroke of the supply pump C is increased or diminished, thus increasing or diminishing the amount of oil pumped, by means of the sliding arm F which forms a movable fulcrum for the pump lever E. When the regulating stem G is screwed down by means of the knurled head I the fulcrum is raised and the stroke of the pump lengthened. Lowering the fulcrum decreases the stroke of the pump piston and diminishes the amount of oil pumped.

The amount of oil supplied is shown by the feed indicators on top of the reservoir, and numbering them left to right, each feeds the cylinder of the corresponding number. With the car running from 15 to 20 miles per hour each should show ten drops per minute. The fifth, or right-hand indicator shows the delivery to the propeller shaft and differential gear.

5—This alone would not affect the ignition seriously, but usually when breaks of this nature occur where they can be seen, there is a chance that there are other and more serious breaks that are covered by the insulation. The best plan when these strands begin to break is to put in new wiring.

6—Oil injected to the timer at the ball oiler in the center of the cover lubricates the timer and the shaft bearings. Oil every 250 miles.

7—Probably the foot throttle connection is too loose, so that it does not open the throttle valve sufficiently. It may be also that the carbureter is not correctly adjusted for high speed.

MAKE-AND-BREAK IGNITION

Mayville, N. D.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly explain the difference between jump-spark ignition and make-and-break ignition?—Subscriber.

In a make-and-break ignition system the spark of the cylinder is made by actually closing and opening the circuit at the point of the spark, so that on the break of the circuit, as the terminals move away from each other, the current is drawn across the increasing gap. Since the current does not have to break through the resistance of the spark gap all at once, as is the case with the more familiar jump-spark system, the tension or voltage need not be so high. Consequently, a current of low tension is used instead of the high-tension current employed in the latter.

The arrangement for make-and-break ignition is shown in Fig. 2. The system comprises a current supply, either magneto or batteries, a primary induction coil when batteries are used, a switch for breaking the circuit, and the igniters. The illustration shows the system with both magneto and battery applied to two cylinders of an engine. One terminal of both the battery and magneto is grounded, the other terminal A of the magneto M is connected to the point S of a three-way switch. The ungrounded terminal of the battery is connected to the induction coil K and thence to the point T of the three-way switch. A conductor C connects the third point of the switch to the stationary or insulated electrode of each igniter. The movable electrodes and the metal of the cylinders furnish the ground return for the current. The movable electrode is operated by a camshaft.

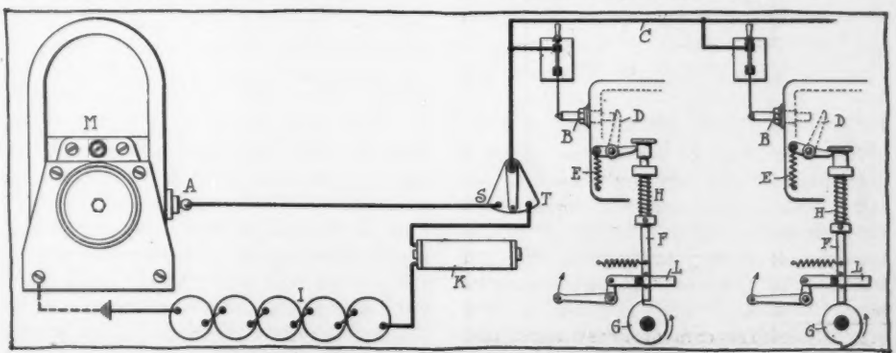


FIG. 2—FEATURES OF MAKE-AND-BREAK IGNITION SYSTEM

HAND OR SPARK CONTROL

Subscriber Objects to Manufacturer's Letter on Ignition

Warren, Pa.—Editor Motor Age—Although there were some points for difference of opinion in the article on spark control in Motor Age November 2, it did not appeal to the general reader that it was necessary for the Eisemann people to take it up as a personal affair. Mr. Steinback comes out with a letter which seems to me to have as much error as did the article which he is trying to correct.

We all know well enough that the two-point ignition does not solve the timing problem; it may make it more difficult to handle and to understand, and hot air and misstatements need not be used in the telling of the fact. Mr. Steinback speaks in rather a sneering way of the twin-plug system, which he would not do if he were really a well-posted engineer.

True, Omia is ridiculous in jumping from the explanation of how very slow gas burns if you light it with one match, to the statement that its combustion is instantaneous if you hurry it up by throwing in two matches. But why get hot about it and malign the users of the modern magnetos by saying that they do not know how to use them? That is comedy.

When you come down to the facts in the question, there is no real rivalry between the two systems any more than there is between the big car and the little one, or the truck and the pleasure car. I have used the double distributor in a car like my own and with great satisfaction, but I would not choose it for general use in any motor. For general use I consider the automatic spark control quite ideal and is what I would buy if I could afford it. There are some motors in which there might be danger in using the two sparks.—W. M. Robertson.

MAKES WATERPROOF SOLUTION

Franklin, Pa.—Editor Motor Age—For the benefit of F. G. R., Hannibal, Mo., who asks for the method of waterproofing motor car tops, I would state that a preparation for the purpose is made in Pittsburg. I believe that a package, which is sufficient for one top, can be obtained for $1. It is made by L. G. Martin, 3923 Forbes street, Pittsburgh, Pa. I have not tried the solution, but it may prove useful.—H. C.

Manufacturers' Communications

FOREIGN BODY STYLES

SYRACUSE, N. Y.—Editor Motor Age—I have returned from a European trip made for the purpose of studying the development of body design in Germany, France and England. The flush-sided body and the sloping type of hood seem to have the predominance of favor among all European manufacturers, and it is interesting to note the way the various designers are going at it. England has led in the development of the flush-sided type and France seems to be the last one in line. This may be due to a small amount of pique because the French designers do not like to admit that they are following any others.

In Germany everything is flush-sided and the Germans are also carrying the matter of the scuttle front to the extreme. One of the most popular types now seen in Germany has a scuttle to both the front and rear seats, the back of the front seat being developed into a scuttle design. Concerning the matter of placing the control levers inside or outside of the body, there is a wide divergence of opinion, but the practice which obtains to the greatest extent is that of putting the gear-shift lever inside the body, the emergency brake lever outside.

It is interesting to note the development of the artistic. The French designers are all for graceful and consistent design with the body lines developed to give the fullest harmony of outline and balance of proportion. In England, the whole idea seems to be utility and practicability. The Englishman gets the idea that he wants both levers inside and he puts them there and builds the body around them, apparently without consideration as to the effect on the body contour.

Every once in a while the sloping type of hood crops out unexpectedly from some old-line designer, and even on the water-cooled cars that still put their radiators at the front of the chassis there is a tendency to slope the hood from the dash down to the radiator; in fact, a great many designers think this sloping type of hood is the only right type and the more fully this type can be carried out the better the appearance of the car.—W. H. Emond, designer H. H. Franklin Mfg. Co.

FROM TIRE MAN'S VIEWPOINT

New York—Editor Motor Age—After a coast-to-coast trip covering more than 10,000 miles, I am extremely enthusiastic over the trade outlook for 1912. I am convinced that next year is going to be a hummer for the motor car trade and its allied interests. There is going to be a big demand for cars of every class, and in the middle and far west, particularly, there seems to exist a great field for small, medium-priced cars.

Passing through a small western town of perhaps 2,500 inhabitants I counted seventeen cars lined along the main street. To me this indicates the extent to which the motor car has been adopted as a means of transportation in farming communities.

Business on the Pacific coast is booming. I visited Los Angeles, San Francisco, Portland and Seattle and found our branches there head over heals in work trying to keep pace with the tire demands of that section of the country. San Francisco is humming with activity and enthusiasm in preparation for the Panama exposition, which undoubtedly will be a big thing for the west. They expect to entertain thousands of tourists during the exposition and are preparing especially for motor tourists. Millions of dollars are being expended in the furtherance of various good roads movements and they are clamoring for national aid in securing appropriations, which will make an improved ocean-to-ocean highway possible.

The general tone of trade throughout the country is decidedly good and the future outlook extremely bright. Personally, I think there is every reason for saying that 1912 will be by all odds the best year, from every standpoint, that the motor car industry has known.—J. D. Anderson, sales manager United States Tire Co.

TIMING OF THE MAGNETO

Detroit, Mich.—Editor Motor Age—A very slight alteration in the magneto will have a considerable effect in increasing the speed of the car. Advancing the magneto one tooth will increase the speed above 5 miles an hour, yet by advancing two teeth, a knock may result that will imperil every rod and bearing in the engine. Cautious experimenting is the only way to learn the correct adjustment. —Charles Splitdorf.

LONGEVITY OF MITCHELLS

Racine, Wis.—Editor Motor Age—Time in its flight has treated lightly Mitchell cars of ancient vintage. One of the most satisfactory proofs was evidenced by our receiving parts order for a model B two-cylinder vertical air-cooled runabout, which we manufactured in 1903. The man who originally purchased this car sent in the order for repairs and says that he is not ready yet to give up his little runabout. He is using it daily and he hopes to continue it in use for some time to come.

In the season of 1903 we manufactured eighty-four cars, to be exact, and this at the present time would hardly make more than a good day's work. We have been conducting some accurate investigations to determine just what percentage of Mitchell cars were still in use. Our object in making this research was to get some definite evidence as to the durability of cars and as to whether or not people could purchase a car, have it last them through a number of years without suffering to an unreasonable extent by depreciation.

Our records show that out of 20,000 cars which we have manufactured, less than 3 per cent has been relegated to the junk heap, or at least are out of commission. We have believed, since we first started manufacturing cars, that they could not be considered a purchase for 1 year, but that in order to perpetuate the business they must last during a period of years, which would bring the investment down to a reasonable basis. If any manufacturer expects to continue in this business he must build for the future and supply cars that will give continued service.—Mitchell-Lewis Motor Co.

CHALMERS PROSPERITY

Detroit, Mich.—Editor Motor Age—That the west rivals the east as a market for motor cars is evidenced by some recent statistics gathered by the Chalmers Motor Co. The 1912 season is now a little more than 4 months old. In this time 205 cars have been sold in Los Angeles and 203 cars have been sold in San Francisco, putting these two cities ahead of all other cities of anything near their size. This is all the more remarkable when it is known that business all over the country shows a remarkable increase over last season.

Not only do these figures indicate the growing prominence of the extreme west as a motor car market, but they also indicate the great volume of business being done for the 1912 season.

Reports dated November 20 show that in the 4 months of the 1912 season just closed, four leading Chalmers dealers have already sold more cars than they sold during the entire season of 1911—and they all did a big business in 1911. Seven other Chalmers dealers, all of whom have for several seasons sold more than 100 cars a year, have already sold 80 per cent as many cars as they sold for the entire season of 1911. These facts would plainly indicate that the 1912 season will be far ahead of that of 1911.

That the south is also making rapid forward strides as a motor market is evidenced by the showing of the southern dealers in Chalmers cars. The Gibbes Machinery Co., of Columbia, S. C., for instance, has in the past 4 months sold seven more cars than were sold during the entire 1911 season. This company also has already disposed of 52 per cent of its entire 1912 allotment. The New Orleans dealer in Chalmers cars has in 4 months sold three more cars than were sold in that territory all of last year. The past 4 months' sales also represent two-thirds of the entire 1912 allotment for that city.

Daily orders are higher than they have ever been at this time of the year for the

Chalmers Motor Co. For the past 2 months this company has been an average of 800 orders behind production, and at the present rate of increase will undoubtedly have the biggest winter's selling season in the history of the company.

As a result of the tremendous increase over 1911 the Chalmers company is working nights in all manufacturing departments.—Chalmers Motor Co.

MISLEADING ADVERTISEMENTS

Philadelphia, Pa.—Editor Motor Age—When Lozier cars, equipped with HB-DWF ball bearings throughout the engine and transmission, finished first and fourth in the recent Vanderbilt cup race we were pleased. More significant and gratifying was the fact that this was at least the fourth consecutive Vanderbilt to be won by a car mounted on HB's. In 1908 the winning Locomobile had them throughout—the engine was plain-bearing. The 1909 and 1910 races were won by the same Alco car with identically the same HB's, save one which was replaced as a precaution, in both races. That Alco had run about 8,000 miles on the same bearings before it entered the second race. In it, as in the Locomobile, HB's were used throughout, save in the plain-bearing engine.

Shortly before the last Vanderbilt the owners of the two Mercedes cars which later finished second and third, purchased at our New York store HB bearings for the wheels of both, and these bearings were used in the race. As they replaced other HB-DWF bearings, it seems probable that HB's also were used in the transmission, though we have been unable to verify this by actual inspection. The bearings we furnished were bought and paid for in the regular way, without regard to their intended use.

Having these facts in mind, imagine our surprise on seeing another competitor advertise his bearings to have been "four-time winners" in the Vanderbilt (by inference), and to have been in all four of the placed cars in the Vanderbilt just won.

The questions naturally arise: 1—To just which four races does our competitor refer? 2—Where, if anywhere, were his bearings used in the four placed cars (Mulford's Lozier, de Palma's Mercedes, Wishart's Mercedes, or Grant's Lozier) in the last race? His advertisement does not specifically state that they were used anywhere—it merely enumerates those cars.

We are not greatly interested in the question whether one make of bearings or another is used in any particular race. Everyday service, not racing, is the real test of merit. But there are such things as straightforward advertising and its opposite, and we submit that readers are entitled to know the facts so far as they can be ascertained.—Hess-Bright Mfg. Co., Henry Hess.

The Motorists' Bookman

Touring in Algeria

THE Arab is quoted as saying that "Algeria is like a diamond set in an emerald frame," and Mrs. Ayer found such to be true in her motor trip through northern Africa, an interesting account of which she has given in her "Motor Flight Through Algeria and Tunisia". The author says that when she tried to find books descriptive of the country through which she and her husband were to tour, that not more than one or two in English could be procured, and the French books were largely historical. This greatly enhances the value of the present book, and it has additional worth because of the trips made into the picturesque by-ways of the country and into the Sahara desert.

Good maps were secured in Paris, and the tourists embarked from Marseilles, crossing the blue Mediterrean to Algeria. Here the six-cylinder car was unloaded and the Algerian tour began. "The roads", says Mrs. Ayer, who is an experienced and trained traveller, "are the best in the world, reaching all parts of the mountains and desert, superior even to the national roads in France. There are thousands of miles of roads in Algeria and Tunis marked every 10 miles with a stone, and at every cross road with a guide post, right out into the desert. All these roads are magnificently built, straight and smooth as a billiard table. The main cities are connected by broad highways and wonderfully graded and drained, with tunnels when necessary and covered ways through the mountains. America should take a lesson from Algeria."

The author is most enthusiastic over the charm of the secenery, the fascination of the people and the oriental life to be seen. The book is profusely illustrated. Emma Burbank Ayer. Published by A. C. McClurg & Co., Chicago. Price $2 net.

Touring in a Runabout

Touring by motor in foreign lands has in most cases been done in big cars. To show how easily, cheaply, and comfortably such a trip may be made in a small car, A. J. and F. H. Hand in "Abroad in a Runabout" convincingly prove that the owner of a small-powered car need have no fear in undertaking similar trips. The car used by the authors was a two-cylinder runabout. The trip was confined to the continent, the tour beginning and ending at Havre.

"Good little car! It had taken us across northern France and southern Germany, had crossed the mountains of Switzerland from northeast to southwest, and followed the Rhone to the sea, had climbed the Pyrenees and played through central France and Normandy, carrying us safely and smoothly without serious accident or inconvenience, in all 3,400 miles; it had furnished us a summer of pure delight and a recollection stored with a fullness of beauty, history, and pleasure that will enrich our lives through all the coming years," write the authors.

The closing chapter gives valuable suggestions for the intending tourist as to the expense of such a trip—the authors made it from Chicago for $1,550—equipment, regulations, insurance, etc.; in fact, just the kind of information the motorist, who is planning a foreign tour, wants to know. A. C. McClurg & Co., Chicago. Price, $1.50 net.

Dorothy, the Motor Maid

This book is the story of an enthusiastic 16-year-old girl who, while convalescing from a serious accident, wins the first prize—a motor car—in a book puzzle contest. The story centers in and around Dorothy's joy at her success and the pleasures the car affords her, her family and friends, closing with a dramatic and tender climax. Many of the illustrations are the historic places in and around Dorothy's home town which are visited in trips made with the car. Katherine Carleton. Published by The Century Co., New York. Price $1.50.

Grand Canyon of Arizona

Few know the Grand Canyon of Arizona as well as George Wharton James, and in his revised and enlarged edition of "In and Around the Grand Canyon" he gives a graphic account of the formations of the canyon, its grandeur and sublimity. The Grand Canyon district in Arizona covers an area approximately the size of the state of Maryland.

It is a comprehensive guide book of the entire canyon district. The author first describes the Colorado river and its series of connecting canyons; then follows an account of the stage and railway rides to the canyon from the main line of the Santa Fe; and then he takes the reader to various portions of the rim of the canyon, when one's time is limited to the hours between sunrise and sunset; suggestions are offered for longer visits; and camping trips, which to the author are by far the best method to enjoy the region, are outlined. "The Grand Canyon is an all-the-year-round resort and may be visited," says Mr. James, "with comfort at any time of the year. In my varied experiences at the canyon I have found the months of September, October and November most agreeable in spite of an occasional hot day in September." There are many illustrations, all typical of this "most sublime spectacle of earth." Little, Brown & Co., Boston. Price $2.50 net.

Kansas City the Motoring Doorway to

Missouri Metropolis Thoroughly Representative of the Industry With Seventy Makes of Pleasure Cars and Twenty-eight Commercial Wagons Represented in a City of 248,381

WHERE THE JACKSON AND AUBURN ARE LOCATED

ALBERTSON-BOYD MOTOR CAR CO., HANDLING THE MARMON AND HUDSON

C. L. TAYLOR MOTOR CAR CO., THE REO AGENT

KANSAS CITY, Mo., Dec. 11—Kansas City may not be the largest distributing point for motor cars in the United States, but the greatest proof that it affords a very large market is, that a year ago there were twenty-five dealers who were handling cars and had subagents in Missouri, Kansas and Oklahoma, and today there are but five dealers in Kansas City who have any territory at all. The manufacturer is realizing that Kansas City is a rich market and is establishing branch houses to reap the harvest of this field.

Ten Factory Branches

Ten factory branch houses are now in Kansas City, four of them being established in the last year, and within a short time many more will be opened. Kansas City has been good to the motor dealer, there being 3,500 motor cars in the city. And the city itself has favored the motor dealer, having more than 75 miles of macadam boulevards in the city limits which are oiled four times a year.

The Kansas City motor dealers are bunched on Grand avenue, but in a very short time it is predicted that the row will begin at Thirty-third and Main and extend south on Main. There are six car firms now out in the new district and two more have purchased property there.

The motor dealers of Kansas City have for 2 years been divided in two factions, necessitating two motor shows, but recently the warring factions buried the hatchet and it has been determined to hold only

DAY-EMBRY MOTOR CAR CO., PIERCE-ARROW

the Car Trade of the Great Southwest

Kansas City Has More Than 75 Miles of Macadam Boulevards Which Are Oiled Four Times a Year and More Than 3500 Motor Vehicles Are in Use—Electrics Are Popular

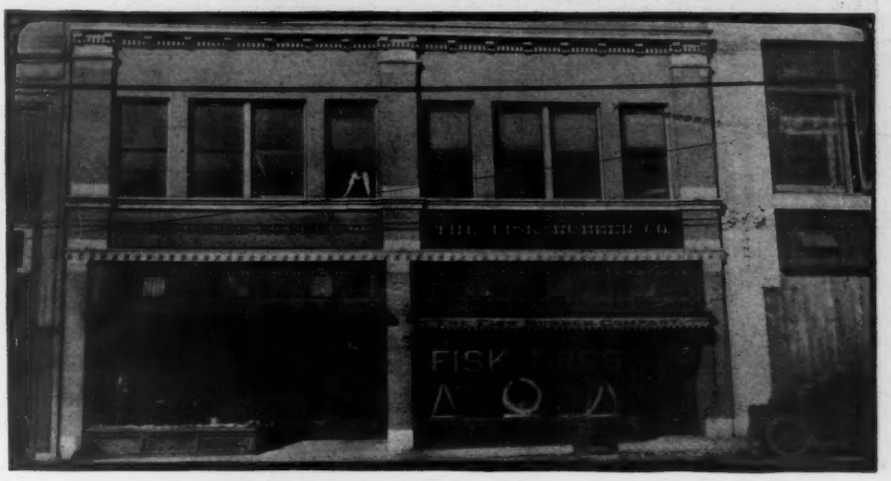
one exhibition this winter. This promises to be a most successful affair.

The motor car business in Kansas City has prospered and many of the dealers have made money in the business. As an illustration of Kansas City's big distributing facilities, the Ford new assembling plant is shown in an accompanying illustration. This building has been erected at the cost of $75,000 for the purpose of finishing the assembly of motor car chassis and building and fitting bodies to them. Thus it is possible to ship twenty-four chassis in one freight car, instead of perhaps four five; and congestion at the factory in Detroit will be greatly relieved during the busy season.

One Car Factory

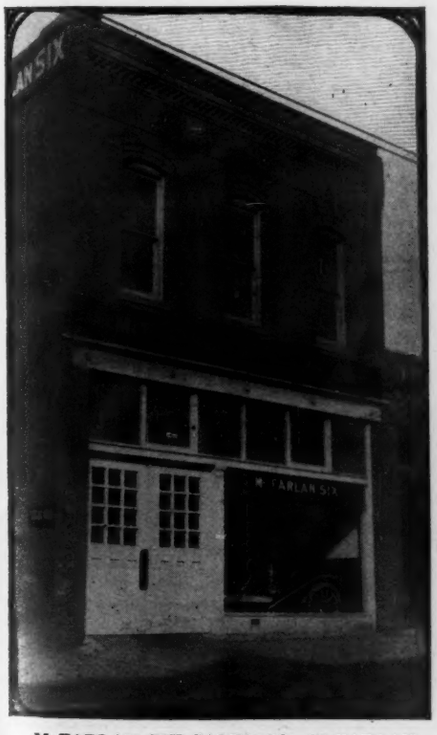
Kansas City has a real car factory making the Stafford. The company is made up of Kansas City business men and the car has had a splendid sale in Kansas City and adjacent territory. The accessory manufacturers also are recognizing Kansas City and many of them are are opening branch h uses. Many accessory concerns have opened branches in this city.

The second-hand car proposition has been an easier one to handle for the dealer this year, as the sale of second-hand cars has been good. Still, many thousand dollars are still tied up in Kansas City. Speaking with one of the leading motor car dealers during the Kansas City show, the question of how the second-hand cars were gotten rid of, or rather what was done to meet the second-hand situation,



TWO OF THE TIRE CONCERNS—THE AJAX AND FISK

STUDEBAKER IS NEXT DOOR TO THE REO



McFARLAN SIX SALES CO., McFARLAN AGENT

KANSAS CITY BRANCH OF OLDS MOTOR WORKS

BUILDINGS THAT HOUSE THE PACKARD, STEARNS AND PREMIER AGENCIES, KANSAS CITY

FORD ASSEMBLY PLANT IN SHEFFIELD

was asked. The dealer did not quite understand what was meant by the second-hand car situation, so the question was put point blank, "What do you do with your second-hand cars?"

"We dust them off once in a while," was the immediate reply. This is the substance of the situation. No special efforts are made to get rid of the second-hand cars, but one thing is positive and that is, that no more second-hand cars are taken in on trade for new cars.

Second-Hand Car Problem

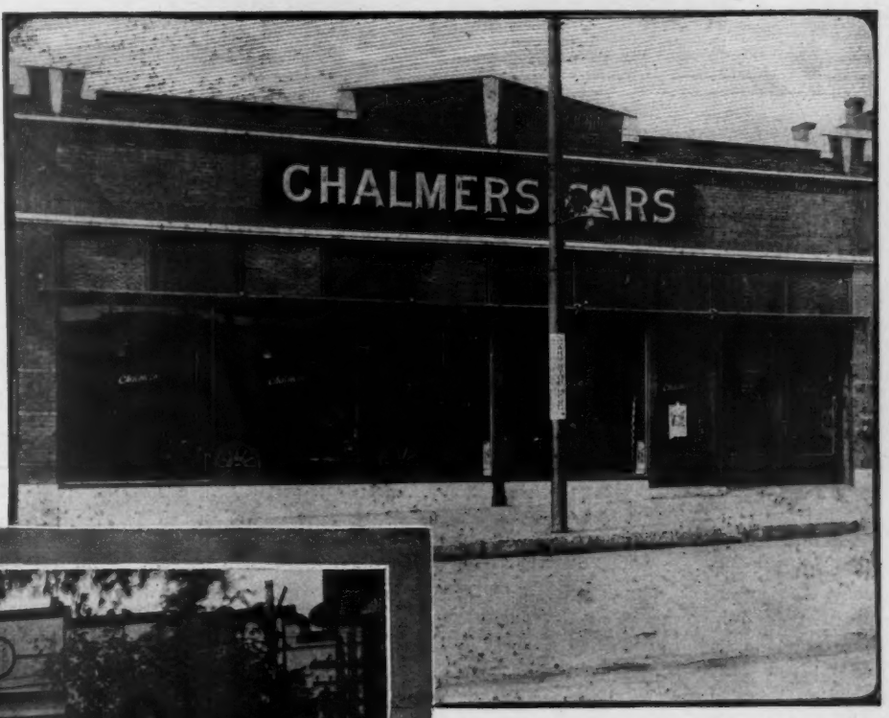
From this it will be seen that in Kansas City one phase of the second-hand car problem, if it may be called such, has solved itself, though it is claimed that the second-hand cars have put more dealers out of business than anything else. The second-hand car itself really is not to blame for the disaster it has brought to many dealers, but loose business methods and lack of integrity are claimed to be at the bottom of much of the trouble encountered by those who have suffered from deals in second-hand cars.

"Primarily, in order to make what appears to be the sale of a new car, one finds a dealer who will take a used car in part payment, often allowing very much more for the old one than it is worth when the cost of putting it in a salable condition

KANSAS CITY BRANCH OF THE FORD MOTOR CO.

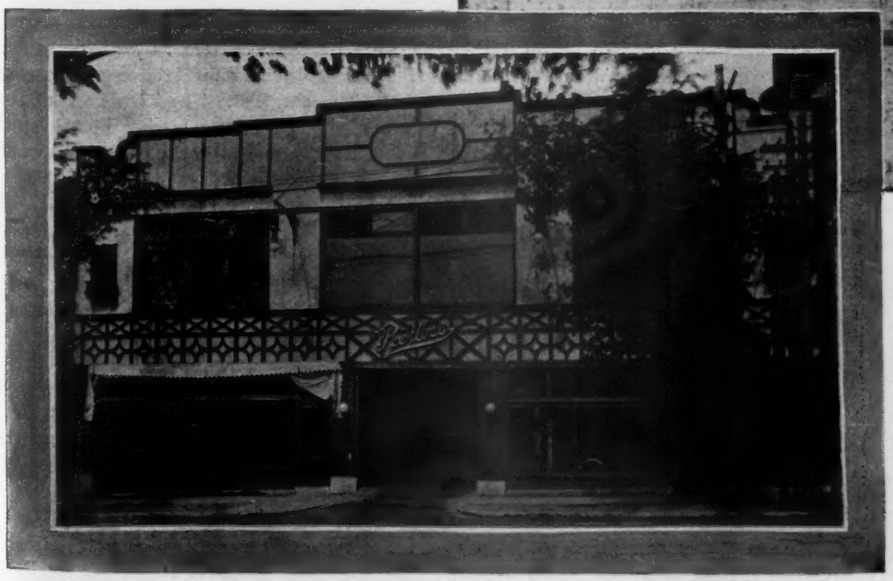
MAXWELL AND OVERLAND STORES ON THE KANSAS CITY ROW

and selling it is concerned," says one of the dealers. "After a while he will conceive that he has gotten the worst of the bargain; then, in order to retrieve, he will give it just enough of an overhauling to permit of a satisfactory demonstration, and in turn give a new motorist a bad bargain. Obviously, the reputation of the maker of the car then receives a black eye with this motorist, and no good can come of such methods. The trouble is that some persons connected with the motor industry have failed to realize that the interests of the manufacturer, the dealer, and the user are all common. Any practice which conserves the interest of one party to the detriment of either of the others, will result, in the end, in conditions unfavorable to all parties.



CHALMERS' AGENCY IN KANSAS CITY

"A bargain that is not good for the maker, the dealer, and the user, is a bad bargain for all parties concerned, including the party who gets all of the best of the bargain. The maker who cheats the dealer and the user will ultimately pay the penalty by having no market for his product. The dealer who cheats either the maker or the user will pay the penalty by ultimately losing his trade or his selling lines. The user who cheats either the dealer or the manufacturer, will pay the penalty in lack of service when he gets in trouble in his dealings later on."



PEERLESS IS HANDLED IN A BUILDING OF ARTISTIC DESIGN

New Hupmobile Model Has Long Stroke

Monobloc Motor with 3⅜ by 5¼-inch Bore and Stroke—Inclosed Valves—Three Speeds and Torpedo Body

FOR the season of 1912, the Hupmobile line will comprise two chassis models instead of one, and the feature of the line will be an entirely new 32-horsepower, long-stroke motor touring car model having a number of features characteristic of the most advanced motor car engineering practice. This new model is to replace the 1911 touring car with its 20-horsepower motor.

By way of comparison, both chassis models are alike inasmuch as both have a unit power plant, cylinders with a ¾-inch bore, a multiple-disk clutch, selective sliding gearset, propeller shaft enclosed in a torsion tube, I-beam front axle, pressed channel steel frame, semi-elliptic front springs and the patented inverted semi-elliptic rear cross spring. The principal differences are that in the new model the cylinders are cast en bloc instead of in pairs; the inlet and exhaust manifolds are cast integral with the cylinders; the stroke is 5¼ inches as compared with 3⅜ inches in the other model; valve mechanisms are enclosed, and the plugs over the valves are eliminated by a single readily removable plate that gives convenient access to all valve chambers at once; a flywheel circulating splash oiling system is employed. Timing gears of the engine and magneto are driven by silent chains, and the magneto is mounted on the flywheel housing in a way that brings its distributor in a convenient position in front of the dash; a spark control is provided and both the spark and throttle levers and a means of regulating the air to the carbureter are arranged in the center of the dash shroud instead of in the conventional position on the steering column; the rear-axle is a floating type.

On the 20-horsepower car, which is continued for 1912, many little refinements and improvements are to be found: An auxiliary inverted top-leaf spring is placed between the frame and rear spring to prevent listing of the body. All driving pinions are fitted with Timken bearings. Four pinions instead of two are used in the differential. The rear axle shafts are tapered into and keyed onto the wheels so that they cannot work loose. Ball bearings previously employed on either side of the differential, now are replaced be specially designed roller bearings.

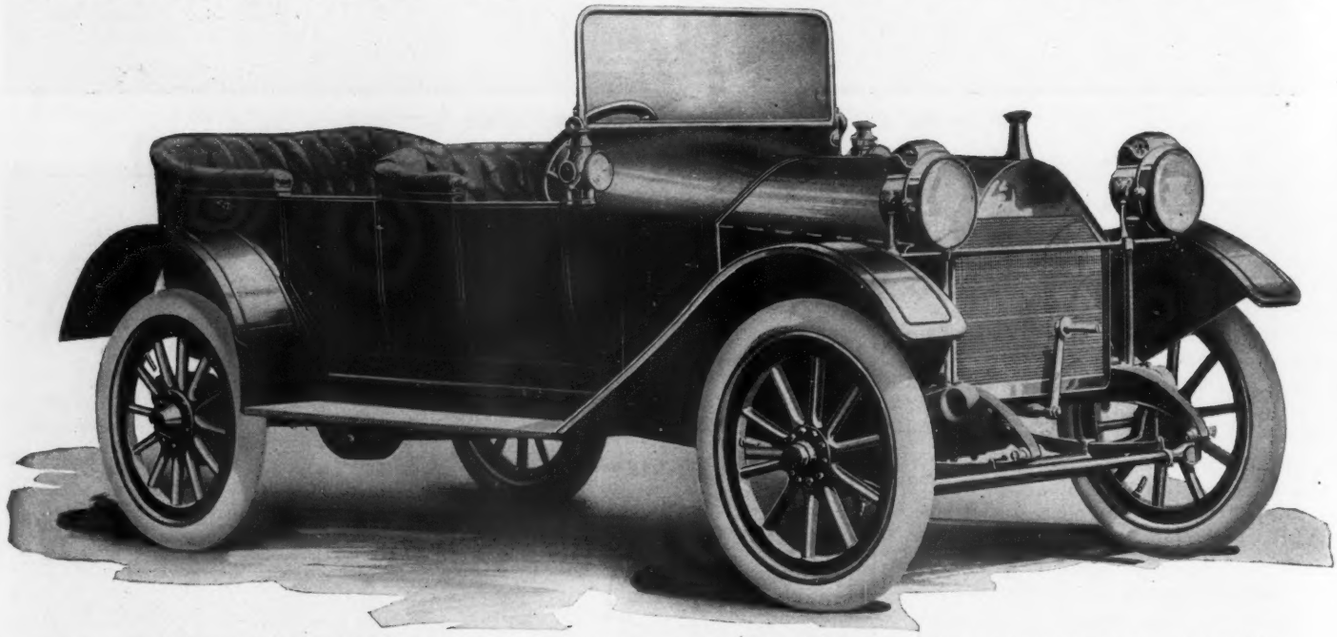


FIG. 1—THE NEW 1912 HUPMOBILE TOURING CAR WHICH HAS A LONG-STROKE MOTOR WITH CHAIN-DRIVEN GEARS

Many Refinements in Details

The axle shafts are babbitted near the brake to prevent grease from escaping. Brakes are increased in diameter from 8 to 10 inches. An adjustable ball housing is provided for the universal joint. All spring hangers are fitted with oilers. Timken roller bearings are used in the front wheels. A new radiator is used which is claimed to be a third more efficient than the one previously employed. There is an improved water outlet on the engine. Radius rods have square lock nuts on the transmission ends to make them more easily adjustable. Double springs are fitted to the foot-brake pedals. A steel flywheel guard is fitted. Mud guards are increased in size from 6 to 9 inches; and mud shields completely inclose the space between frame and fenders. The magneto is encased in a Rubbertex cover. Hub caps are of brass. Timing gears are of bronze instead of fiber. Valve-adjusters are provided to maintain the correct timing and noiseless operation of the valve-operating mechanisms. All cast iron used on the car is sand-blasted to give a smoother surface and keep grit out of gears and bearings. An improved Breeze carbureter is fitted. All side-door models are inside driven, and fore-doors are included without extra charge.

Simplicity is a Feature

The simple and accessible arrangement and design of the external features of the new Hupmobile motor are very clearly shown in the accompanying illustrations; and as for the internal details, the valves all are on the left side with all operating features hidden from sight and protected from dust and dirt. The valves are of the bevel-seat poppet type with nickel steel heads and carbon steel stems. These work in long guides to prevent air leaks. Valve tappets are of square section, hollow and specially lubricated; and standard screw and lock nut adjustments are provided. The camshaft is a steel drop forging with integral cams. It is hardened and ground, with the cam profiles ground to a master cam to insure quiet and uniform operation. The shaft is mounted in three bronze bearings 1½ inches in diameter.

Pistons are light and carefully fitted; each has three compression rings of new design; and special attention has been given to the lubrication of the pistons. The piston pins are hardened and ground; and they are clamped in the end of the connecting rod and turn in the piston.

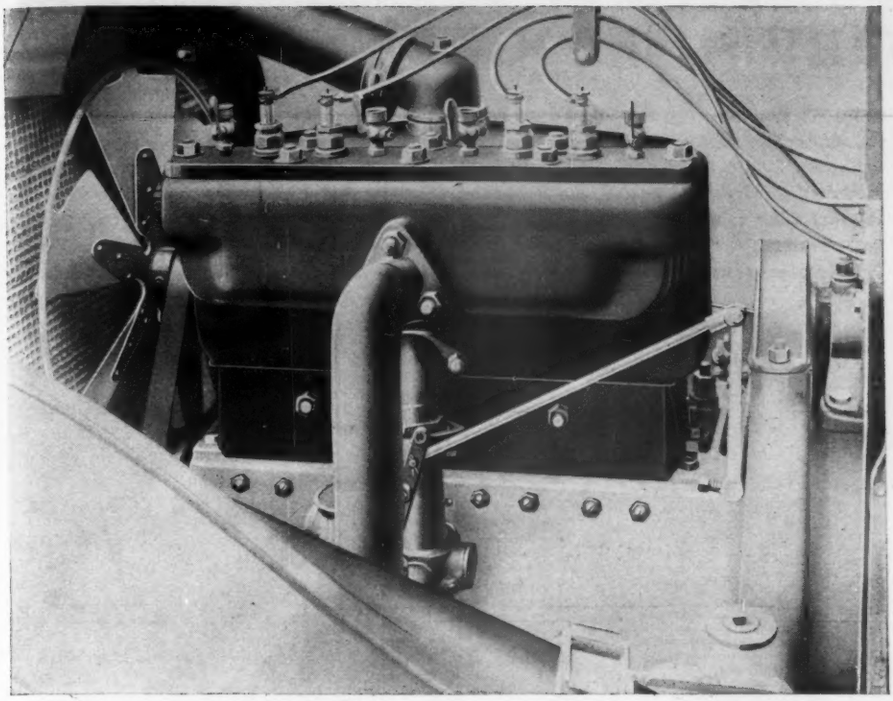


FIG. 2—LEFT SIDE OF MOTOR IN NEW HUPMOBILE CAR

Connecting rods are drop-forged and heat-treated and the caps are secured by four alloy steel bolts in reamed holes.

The crankshaft is of the three-bearing type, with the crankpins and bearings all 1½ inches in diameter except the rear bearing, which is $1\frac{5}{16}$ inches in diameter. The crankpin and main bearing bushings are of bronze lined with special bearing metal. They are split so as to be readily adjustable; and a large hand hole plate is provided at the bottom of the case to give access to the bearings.

The upper part of the crankcase and the entire transmission change gearcase are cast together from a high grade aluminum alloy. The lower part of the case is of pressed steel; and it extends to the side members of the frame. It supports the motor unit and the radiator, and forms a dust-tight pan.

Cooling and Oiling

Cooling is effected by the thermo-syphon system, in which a vertical tube radiator of cellular design, and a belt-driven ball-bearing fan, are the principal features. Lubrication is by means of a flywheel circulating system, in which the base of the flywheel housing forms the oil reservoir. The revolving flywheel raises the oil and throws it into ducts that carry it to the main crankshaft bearings. The crankshaft is drilled and the oil from the bearings enters the ducts in it and is carried to the crankpins. The oil that is thrown off from the crankpins lubricates the cylinders and pistons and other internal motor mechanisms, and there is a tube attached to the rods which conducts oil from the crankpins to the piston-pin bearings.

A high-tension magneto furnishes the current for the ignition system. It is mounted on the flywheel housing and driven by an enclosed silent chain from the timing gears. Its working parts are very accessible, yet are completely protected from dirt and water. The magneto is for the most part under the shroud of the dash. Unlike the fixed spark control characteristic of the other model, a spark control level is provided.

The Clutch and Gearset

The clutch is a multiple-disk type, with large tempered and ground disks of saw steel running in an oil bath. A ball-thrust bearing is used, and the springs are readily adjustable. To facilitate shifting of the gears, a clutch brake is provided.

The sliding selective gearset employed gives three forward speeds and reverse; shafts are short and compact and mounted on ball and Hyatt roller bearings. Gears are 6-8 pitch with ¾-inch faces; and all are carefully hardened and heat-treated. Both shafts are in the same vertical plane, and the main or sliding-gear shaft is 1½ inches in diameter and has four integral keys. The universal joint at the rear end of this shaft is of the trunnion-block type. A torque tube surrounds the propeller shaft. This tube is tapered and has a globe at its forward end which fits a spherical socket at the rear end of the gearcase; this globe comprises an oil-tight casing for the universal joint.

Floating Rear Axle

In the floating rear-axle employed, the bevel driving gears are 5-pitch, fully hardened and carefully fitted. The driving pinion runs between two roller bearings, thrust bearings are of the grooved race ball type; and the driving gear and wheel bearings are of Hyatt roller design. The axle casing has a cast steel center with tapered drawn steel tubes attached to it; and the wheels are mounted on the ends of these tubes. Brake drums are 12 inches in diameter and have a 2-inch face, and the brake shoes or bands are lined with asbestos fabric. Service brakes are of external contracting design, readily adjustable; and the emergency brakes are internal expanding operated by a centrally located hand lever.

The front axle is an I-beam drop forging with inverted Lemoine type steering knuckles. The spindles are 1½ inches in diameter, and equipped with Hyatt roller bearings. Springs have bronze-bushed eyes.

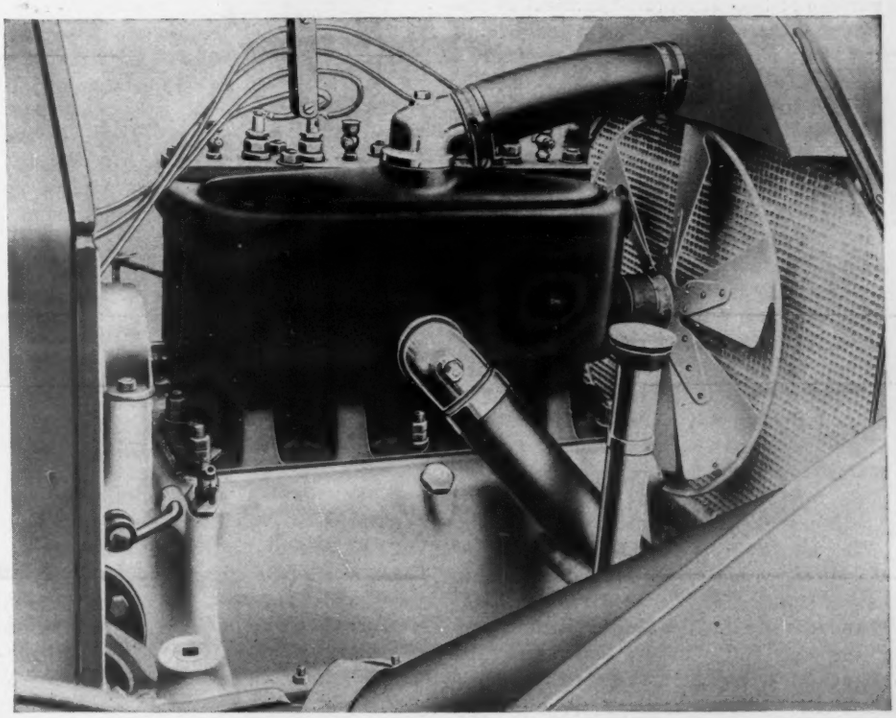


FIG. 3—RIGHT SIDE OF NEW HUPMOBILE MOTOR SHOWING MARKED SIMPLICITY

Buda Company's Product for 1912

FOR 30 years the Buda Co., Harvey, Ill., has been a prominent manufacturer of railway equipment and supplies. Three years ago it started to make motor car engines for the Chalmers and Hudson according to their designs and specifications; now the Buda company is manufacturing engines and transmission gearsets of its own design which are being used by six American motor car manufacturers.

Two types of the motors and gearsets made by the Buda company are illustrated and described herewith, and a short study of the illustrations alone will serve to show that the product is not an experiment, but an embodiment of features characteristic of the most advanced engineering practice, in which simplicity and accessibility predominate.

The motors are almost identical in design and construction except that the model O, Fig. 1, has a three-bearing crankshaft, a bore and stroke of 4⅛ and 5½ inches, and an intake gas manifold cast integral with the cylinder casting; while the model M, Fig. 2, has a 3¾-inch bore and 4½-inch stroke, a two-bearing crankshaft and a separate Y-shaped gas inlet manifold.

Crankcase Construction

The crankcase is made from an aluminum alloy, and is divided horizontally into halves, the upper half supporting the crankshaft and camshaft, and the lower portion containing the splash basins and oil reservoir of the circulation oiling system. The supporting arms are cast on the upper half of the crankcase, so the lower half of it may be readily removed for the purpose of inspection or adjustment of the internal mechanisms without disturbing the crankshaft bearings.

A heavy drop-forged steel crankshaft is used which is forged, heat-treated and machined in the Buda plant, and all bearing surfaces are ground to size. The rear end is provided with a flange to which the flywheel is bolted, and the company claims that its method of heat treatment has raised the tensile strength of the crankshafts from 87,000 pounds per square inch to 120,000 pounds per square inch, and the elastic limit to 85,000 pounds per square inch. Nickel steel bolts instead of studs are used to secure the caps of the crankshaft bearings into place; and an unusually strong web construction is employed to insure rigidity of the crankshaft supports.

The Model O Motor

The left side of the model O motor in the lower section of Fig. 1, shows a number of interesting features. At A, for instance, is a hollow lug containing a spring and ball plunger, that communicates with a recess in the starting-crank shaft to hold it in a vertical position when not in use. There are no mechanisms in front of the cover of the engine gearcase to render its removal difficult. The fan is mounted on an adjustable bracket which is substantially secured to the front of the cylinder casting; and the large fan-belt pulley is operated from the same engine gear that drives the water pump and magneto. Attention is called to the reinforcement webs of the water pump brackets and of the magneto bracket M. There is a coupling between the fan-belt pulley and the water pump, and another between the pump and magneto; these not only make it possible for either of these mechanisms to be removed independently of the others, but the design of the couplings are of a flexible design that permits of any slight misalignment of the shafts to exist without damage to the bearings of the mechanisms. Two removable clamps C, one on either side of the pump, secure the pump to the pump brackets. At I is shown an oil indicator which is provided to show the height of the oil supply in the reservoir. It comprises a rod with a little ball at the upper end of it and with a float at the bottom end. The float is contained in a special float chamber communicating with the oil reservoir. The large filler cap P is conveniently located on the left rear leg of the crankcase so that when replenishing the oil supply in the motor, the ball in the glass of the indicator I can be seen readily to guage the amount.

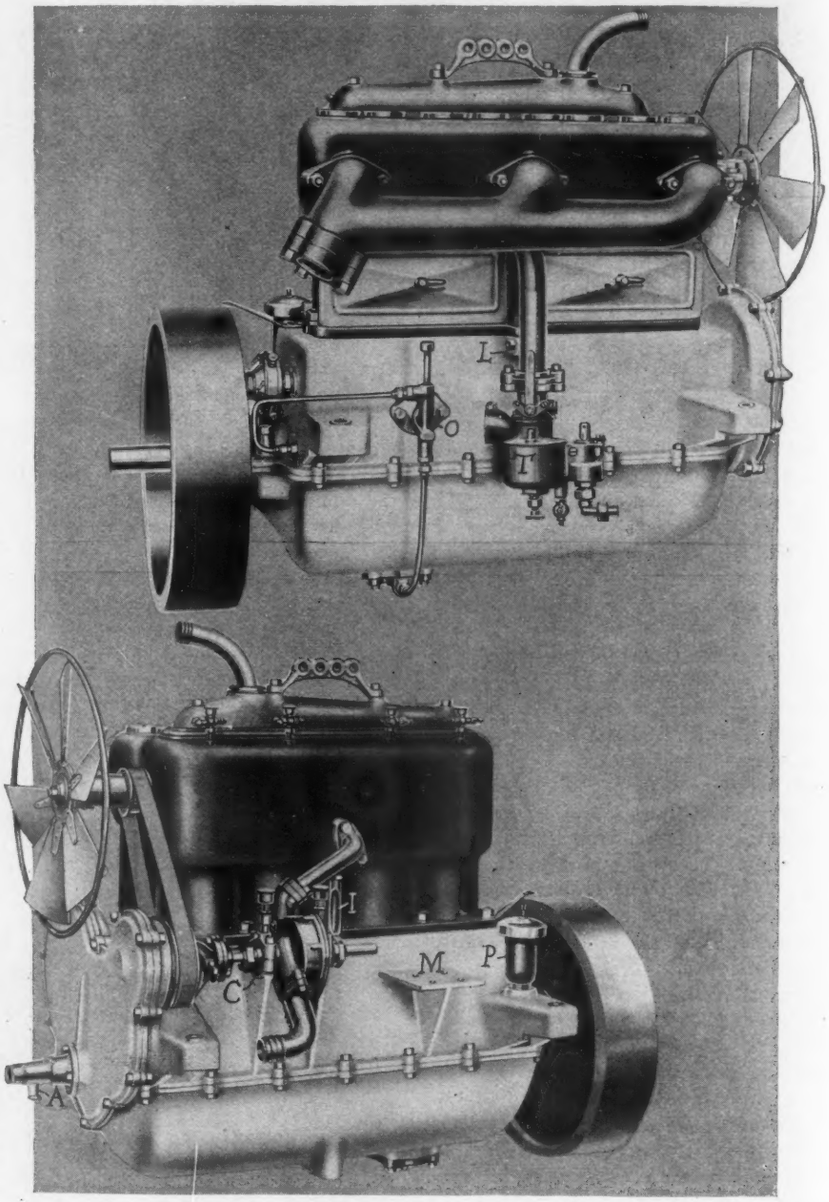


FIG. 1—RIGHT AND LEFT SIDES OF BUDA MODEL O MOTOR SHOWING THE GENERAL ACCESSIBILITY AND SIMPLICITY OF ITS DESIGN

Two Types of Engines and Gearsets

The right side of the motor is almost equally simple in appearance, owing to the inclosure of the valves, the incorporation of the inlet manifold in the cylinder casting, and the absence of all fittings other than the carbureter T and the oil pump O. The latter is arranged on the outside and so as to be interchangeable. They are provided with large waterjacket space which is arranged so that the water is discharged from the pump directly beneath the valves. The top of the cylinder jacket has a specially-designed cover that can be removed quickly, giving free access to

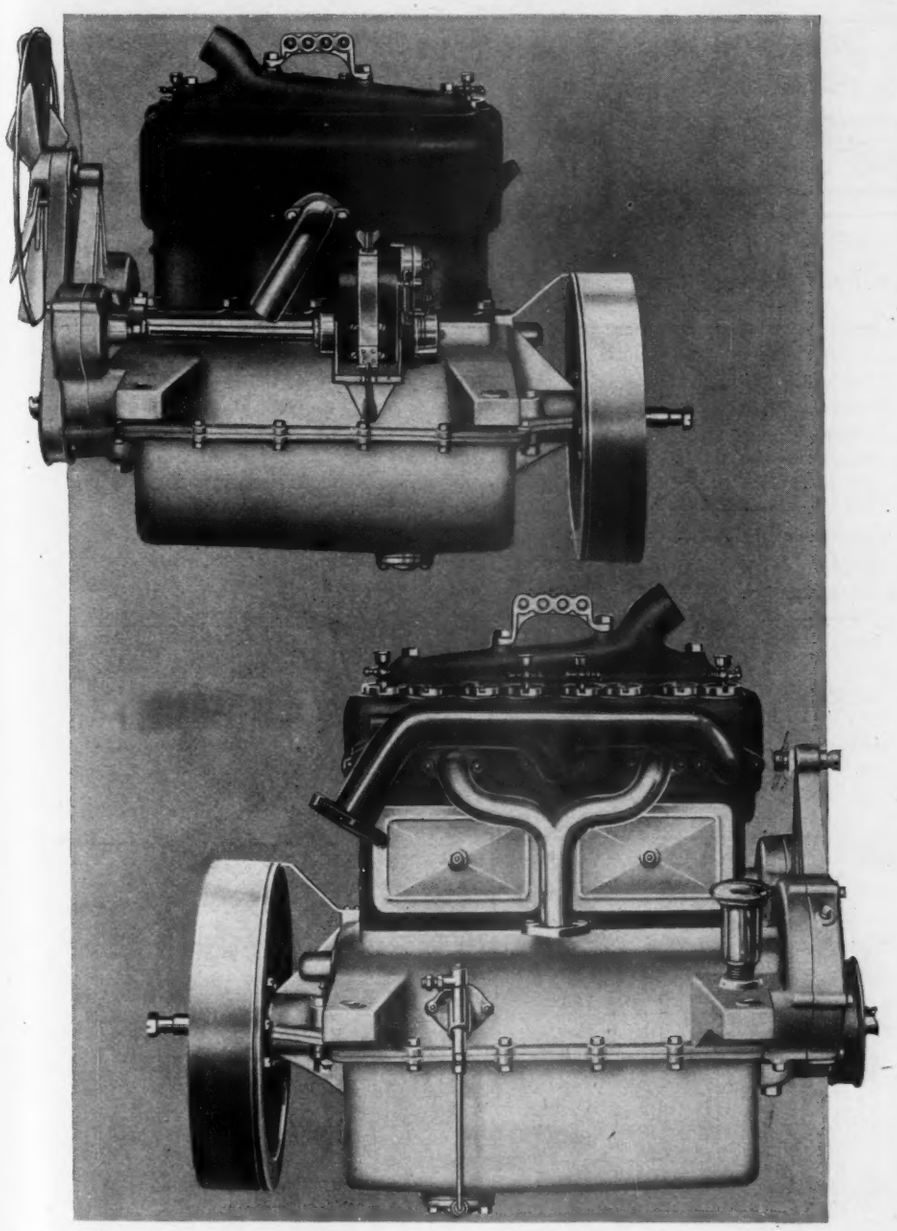


FIG. 2—LEFT AND RIGHT SIDES OF THE BUDA MODEL M MOTOR WHICH HAS A TWO-BEARING CRANKSHAFT AND SEPARATE INLET MANIFOLD

in an accessible position so that it may be removed readily for inspection or cleaning. It has but two external leads, the one below through which oil is drawn from the bottom of the case, and the upper one which conducts it to the interior of the case.

Cylinders are made in the Buda foundry from a grey cast iron mixture and are accurately machined to a standard size the waterjackets should it be necessary to inspect or clean them.

Pistons are of cast iron, ground to size, and provided with oil grooves for lubrication of the cylinder walls. Each piston has four rings arranged above the piston pin and these are ground on the circumference and sides and carefully fitted in the grooves. The piston pins, which are hollow, are made of open-hearth steel, ground to size, and secured to the piston by a single stud. Connecting rods are drop-forged from selected open hearth steel. The upper ends of the rods are bushed with phosphor bronze; and the lower ends are fitted with adjustable die-cast bearings. All of the crankshaft bearings are bushed with Babbitt metal; and the camshaft bearings are of phosphor bronze.

Camshaft Bearings Graduated

An important feature of the camshaft bearings, is their graduation in size, the one at the rear end of the motor being the smallest, the next one larger and the one at the front end the largest. This permits of convenient assembly or disassembly of the camshaft from the motor and provides a large durable bearing where most needed at the forward end near the driving gear. This is quite clearly shown in the sectional view of the motor, Fig. 4.

Bevel-seated valves are employed, which are made with nickel steel heads, electrically welded to soft steel stems. These, too, are accurately machined and ground to a standard size to render them interchangeable. Push rods are of the adjustable, mushroom type, and specially designed to prevent leakage of oil from the crankcase. All valve-operating mechanisms are inclosed so as to be protected from dirt and dust; thus long life and noiseless operation should be obtained.

All timing gears are cut helical on automatic hobbing machines in order to secure the best results; and particular attention has been paid to the accurate maintenance of gear centers. Special equipment is employed to insure the proper machining of these parts. The gears in the motor are of an unusually coarse pitch so a generous bearing is obtained and the set is comprised of one steel crankshaft gear, cast iron camshaft, water-pump shaft, and idler gears. Flanges are provided to take care of end thrust and end play, and all gears are easily accessible after the gear-case cover has been removed.

Forged in One Piece

The camshaft, cams and the flange to which the timing gear is bolted, all are forged in one piece; and the bearings and working surfaces of the cams are ground.

The flywheel is regularly furnished to accommodate a cone clutch; but in quantities it can be furnished for any style clutch desired. Intake gas pipes on the model M motor are of aluminum and readily removable, but on the model O, the short connection between the carbureter and the cylinder casting is of bronze to match that of the oil and water pumps. Exhaust pipes are of cast iron with an expansion joint at the outlet end.

In the cooling system, the water pipes are extremely short and simple in construction, and are designed to connect to the

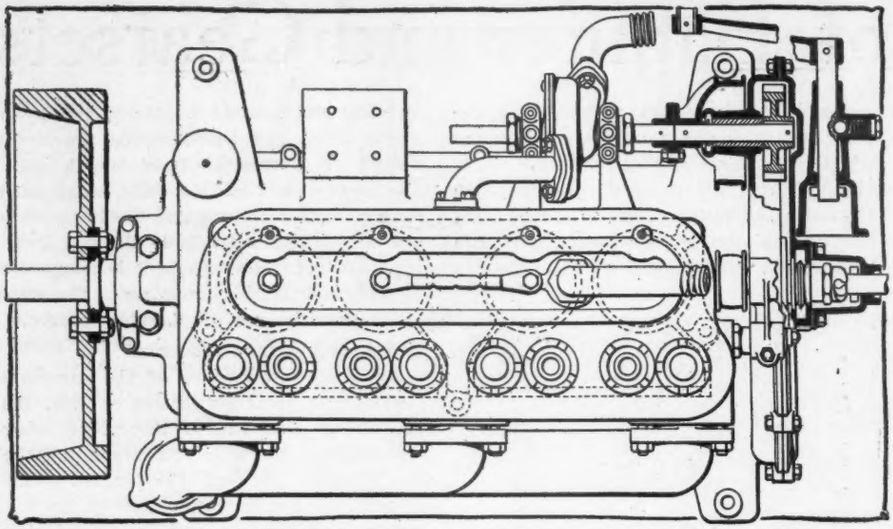


FIG. 3—PLAN VIEW OF THE BUDA MODEL O MOTOR, SHOWING LONG SHAFT BEARING OF GEAR THAT DRIVES WATER PUMP AND MAGNETO. THE STARTING CRANK ALSO IS SHOWN IN SECTION IN THE UPPER RIGHT-HAND CORNER

radiator without bending the hose. The circulating pump is of the centrifugal type with bronze runner and bronze bearings. Either of the two types of motors shown herewith can be furnished in quantities arranged for thermo-syphon circulation. The fan is mounted on two sets of ball bearings.

Ignition and Lubrication

As for ignition, a magneto bracket is provided to which any of the popular types of magnetos may be attached; and the magneto is driven through an Oldham coupling by the same shaft which drives the pump. If desired a commutator of the roller type is attached to the end of the camshaft; but in case a commutator is not desired, a neat aluminum cap is attached which can be removed, and a commutator attached later without change of any kind.

Lubrication of the motor, as previously intimated, is by means of a circulating splash system, in which a small plunger pump M, Fig. 5, which is driven by an eccentric cam on the camshaft draws the oil from the reservoir at the bottom of the engine crankcase, and forces it into troughs situated above the main bearings of the crankshaft. The overflow from these troughs, and that which passes down through the bearings, drains into the splash basins formed in the horizontal partition T which separates the splash compartments from the oil reservoir R below. A certain level is maintained in these splash basins and there are scoops S on the bottom of the connecting rods that dip into the oil and scoop it up for the lubrication of the big ends of the rods.

Many interesting details of the oiling system are to be seen in the sectional views of the motor, Figs. 4 and 5, the oil from the pump is conducted to the troughs H, through ducts N, P, Fig. 5. From the trough H at the forward end of the motor, Fig. 4, oil flows through opening N into the engine gearcase. Another opening below the main bearing allows an excess of oil therein to drain out; and oil that is thrown up to the top of the case drains down the rear wall and is caught by the lip L and drained into a trough located above the front camshaft bearing. The oil basins formed in the partition T are very clearly shown in this illustration; so are the scoops S on the bottom of the connecting rods. The overflow from the basins passes through openings G and falls into the reservoir R. There is a fine wire strainer A at the bottom of the case through which all oil must pass before being recirculated by the pump. This is contained in a removable plate to facilitate cleaning. A feature of the oiling system is the provision of oil throwing rings O at each end of the crankshaft and outer end of the pump gear shaft, which prevent leakage of oil at these points.

The Buda Transmissions

The same care which is exercised in the manufacture of Buda motors is likewise employed in the construction of the transmission gearsets. Each gear is carefully inspected and tested not only for accuracy but for hardness of material in special testing machines; and all parts are machined in special jigs to insure absolute interchangeability. After being assembled each transmission is tested thoroughly and given a special run both with and without load.

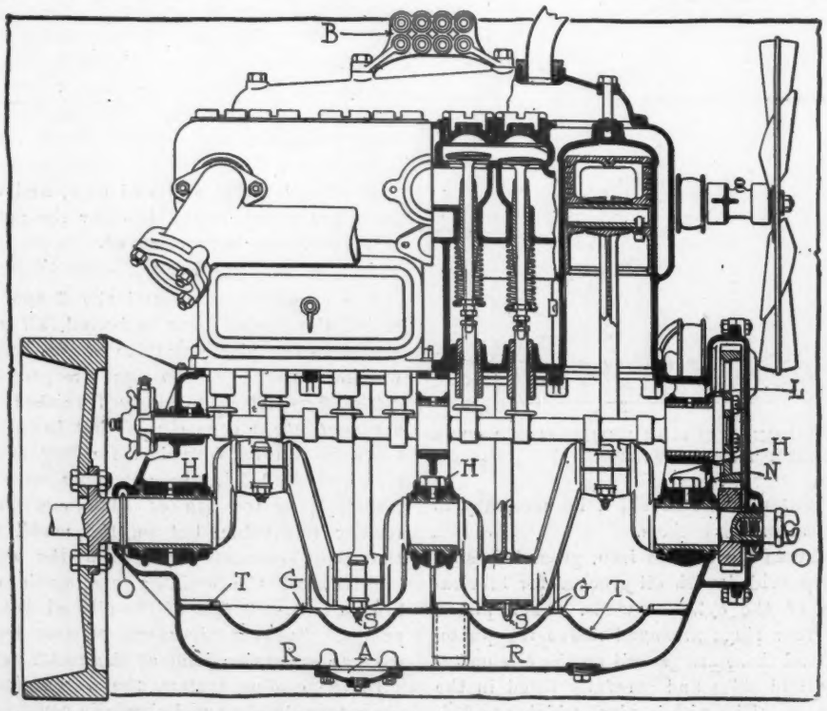


FIG. 4—SECTIONAL VIEW OF MODEL O BUDA MOTOR SHOWING MANY INTERESTING FEATURES OF DESIGN

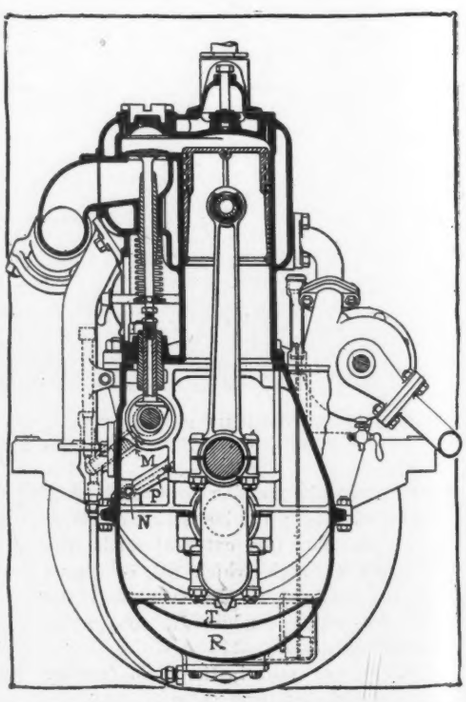


FIG. 5—END SECTION OF BUDA MODEL O MOTOR

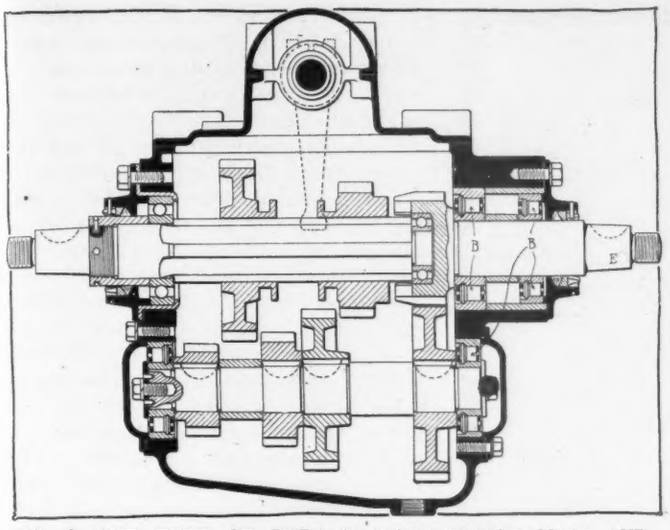


FIG. 6—ONE TYPE OF BUDA GEARSET WHOSE MAIN AND COUNTER SHAFTS ARE IN THE SAME VERTICAL PLANE AND THE SHIFTING MECHANISM ARRANGED FOR SIDE CONTROL

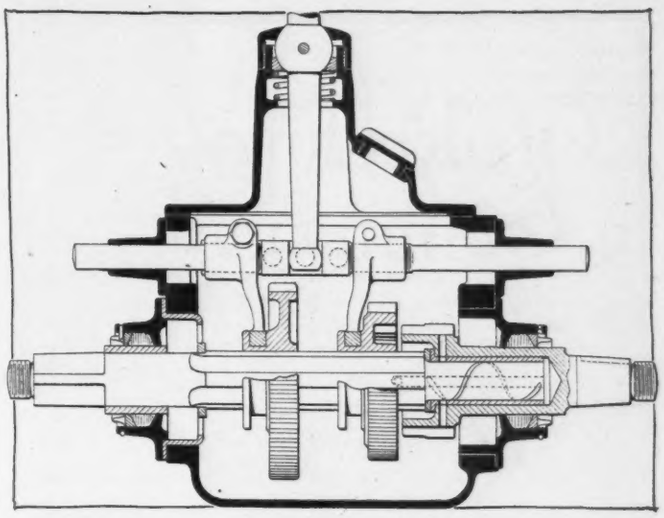


FIG. 7—A BUDA GEARSET WITH BOTH SHAFTS IN THE SAME VERTICAL PLANE AND WITH THE SHIFTING LEVER MOUNTED ENTIRELY ON THE COVER FOR CENTRAL CONTROL

Details of the construction of the Buda transmission gearsets are quite clearly shown in Figs. 6 and 7. They give three forward speeds and reverse with direct drive on the high speed through a clutch mounted on a spline shaft. No power is transmitted through the gears when running on the high speed. The gearcases are made of a special aluminum alloy giving both lightness and strength; and shafts and gears are made of steel selected especially for the purpose. The gears are machined, and the teeth cut and rounded on modern automatic machinery designed for the purpose. The gears, after being hardened, are chucked perfectly true by the pitch diameter and the holes ground true which insures the gears running perfectly and facilitates lubrication. The company claims that by its method of hardening the gear teeth are file proof yet may be upset with a hammer without breaking.

The sliding gearshaft is of case-hardened steel, and it has four keys which serve to drive the sliding gears, these keys being integral with the shaft. An advantage of this over the square shaft is that it permits of the grinding of the bore of the gears perfectly true and concentric with the teeth which cannot be done with the square shaft. Countershafts also are heat treated, and idler gears are fitted with bronze bushings which run on a hardened steel pin. Shifter forks are of drop forged steel with the forks case hardened. The gearsets are fitted with a positive interlocking device which prevents either shifter being removed until the other is in neutral position. All parts are made to standard jigs and gauges so as to be interchangeable.

MOTOR CAR LITERATURE

A neat booklet has been received from the Heald Machine Co., Worcester, Mass., dealing with the subject of cylinder grinding.

The Firestone Tire and Rubber Co. have issued a wall hanger illustrating its Firestone non-skid tires. The hanger shows a crowded thoroughfare and in the foreground is an exceedingly tall tire.

A three-page folder issued by the O'Neill Automatic Electric Co. goes into detail as to the advantages of its system for starting, lighting and ignition purposes.

A conventional catalog, in an attractive three-color cover, describes and features the line of Adams trucks for the 1912 season, which the Adams Brothers Co., Findlay, O., are manufacturing.

A preliminary announcement from the Midland Motor Co., Moline, Ill., outlines in a conventional manner the Midland cars for the season of 1912.

In a two-tone blue cover with the Alpena monogram in gilt in the upper right-hand cover, the Alpena line for 1912, which the Alpena Motor Car Co. are marketing is conventionally featured. The usual car parts, and specifications are included.

The B. F. Goodrich Co., Akron, O., has recently issued a route book of southern California, and is the first of a series this company contemplates publishing covering the routes on the Pacific coast being marked with Goodrich road signs. The territory extends from the Mexican border to Los Angeles and the surrounding picturesque country.

The Croxton Motor Co., Cleveland, O., has issued an advance sheet featuring its line of Croxton vehicles for 1912. This company's line of taxicabs also is fully described and illustrated in neat catalog.

The Electric Appliance Co., Chicago, has issued a 1911-1912 catalog illustrating its line of motor car, motor boat, and motor cycle specialties of all descriptions.

The model M coupe of the Standard Electric Car Co., Jackson, Mich., is conventionally described in a recent catalog mailed by this company to the trade.

A three-colored, 19x24½ size, wall hanger exploits the advantages of the Vanguard windshield.

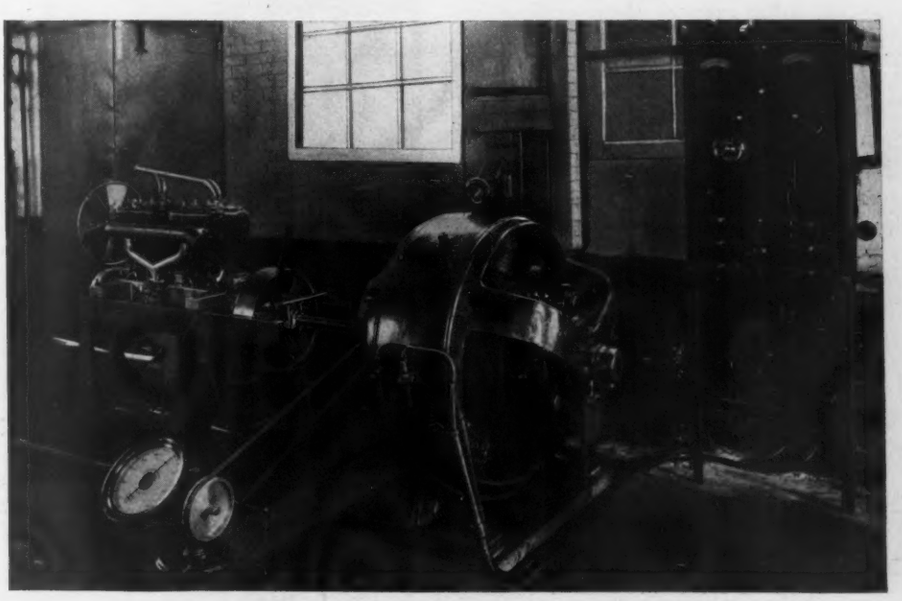
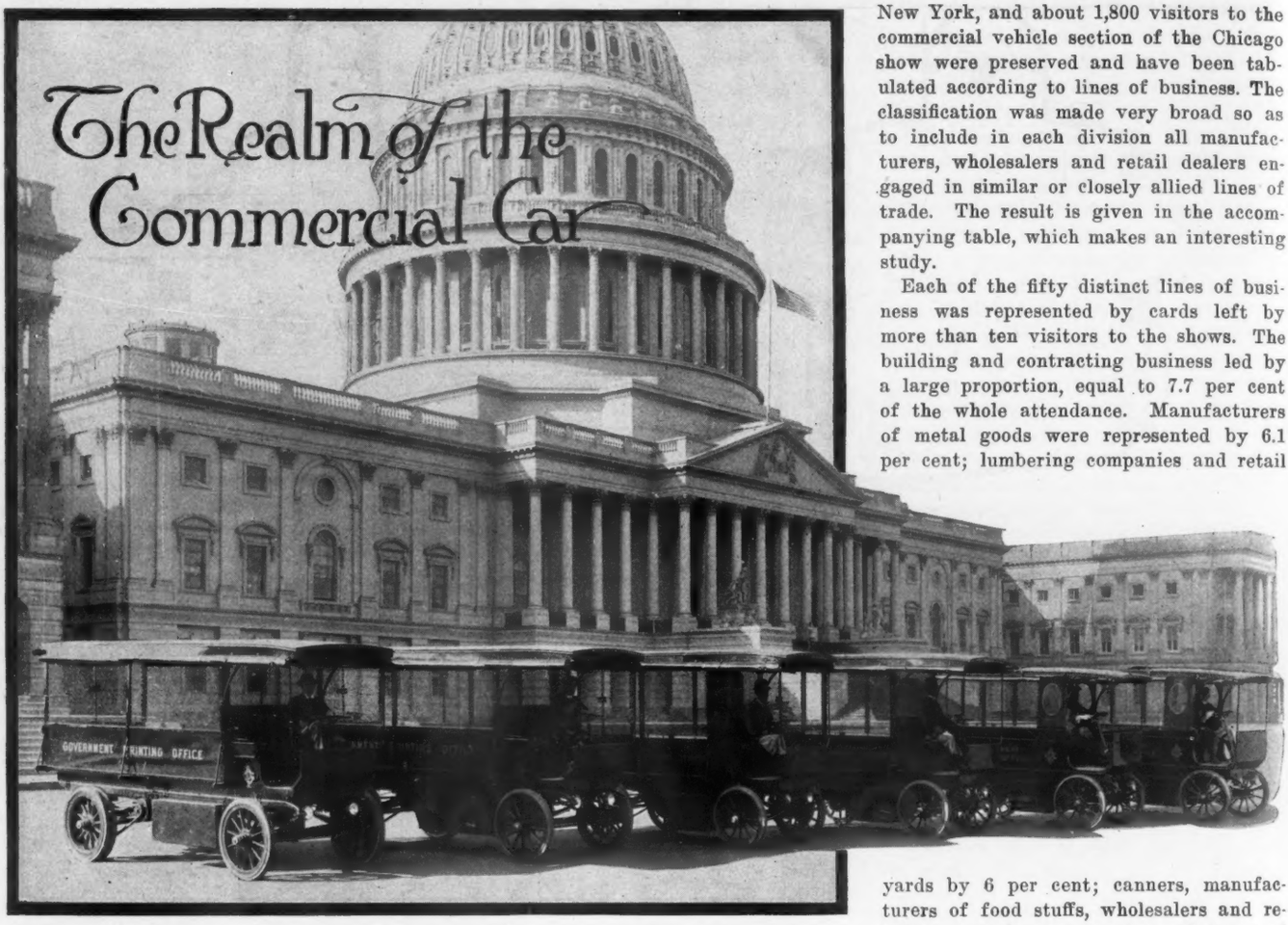


FIG. 8—DYNAMOMETER USED IN EXPERIMENTING WITH BUDA MOTORS

The Realm of the Commercial Car



BAKER ELECTRICS IN THE SERVICE OF THE GOVERNMENT PRINTING OFFICE

INTERESTED IN MOTOR TRUCKS

TO what extent different trades are adopting motor trucks and delivery wagons is a matter largely of speculation because complete statistics are not available. The subject is one of considerable interest and some importance, however. Several of the leading truck manufacturing companies have classified the trades in which the users of their machines are engaged and have tabulated the results. From this work it is learned that one Detroit maker has sold 3-ton trucks and a few 1,500-pound wagons for use in 125 different lines of business. In this case it developed that breweries headed the list of users, with express and transfer companies second in number, grocers third, packers and department stores tied for fourth place, and furniture companies and storage warehouse and van companies tied for fifth place.

On the other hand, similar tabulation by a company engaged solely or principally in the production of motor delivery wagons and light trucks would show very different results, with department stores or other retailers probably at the top of the list of users of commercial motor cars.

Some useful data along this line has been compiled from information relating to the classes of attendants at last winter's exhibitions of motor trucks and delivery wagons at the national shows. Cards left by more than 1,500 visitors to part II of the Madison Square garden show in New York, and about 1,800 visitors to the commercial vehicle section of the Chicago show were preserved and have been tabulated according to lines of business. The classification was made very broad so as to include in each division all manufacturers, wholesalers and retail dealers engaged in similar or closely allied lines of trade. The result is given in the accompanying table, which makes an interesting study.

WINCH ON SAMPSON EMERGENCY TRUCK

Each of the fifty distinct lines of business was represented by cards left by more than ten visitors to the shows. The building and contracting business led by a large proportion, equal to 7.7 per cent of the whole attendance. Manufacturers of metal goods were represented by 6.1 per cent; lumbering companies and retail yards by 6 per cent; canners, manufacturers of food stuffs, wholesalers and retail grocers by 6 per cent; printers and publishers by 5.1 per cent; machinery makers by 4.6 per cent and general merchandisers or department stores by 3.5 per cent.

Although this tabulation may not tally with records by individual power vehicle manufacturers, it may be accepted as closely indicative of the relative interest taken in industrial and commercial motor vehicles by the various trades. The figures are not a guide to the proportionate numbers of vehicles in use in the different lines of business or likely to be bought by them, because, for example, one department store might have use for fifty or 100 delivery wagons whereas an undertaker would need but a single motor hearse.

Furthermore, the figures must be taken in conjunction with the relative number of companies engaged in the different trades. The attendance of 100 grocers at the shows would not have anything like the same significance as that of an equal number of brewers- for instance, because the former are so numerous and individually do a comparatively small business, while the latter are manufacturers on a large scale and use many trucks, most of them of large size.

Interest in the use of power vehicles has developed so much during the present year that the attendance at the twelfth annual shows to be held this winter will

DETROIT FIRE ALARM SERVICE USES WINCH ON SAMPSON TRUCK FOR PULLING CABLE THROUGH CONDUIT

be divided among many more lines of trade and no doubt will be greatly augmented. The table mentioned follows:

Trades represented—	Total number cards preserved	Proportion per 1000
Building and contracting	247	77
Metal manufacturing	194	61
Lumbering and lumber yards	190	60
Grocery	190	60
Printing and publishing	165	52
Machinery	147	46
General merchandising	113	35
Municipal officials	97	30
Hardware	93	29
Clothing	91	28
Furniture	91	28
Produce and commission	88	27
Coal	79	25
Iron, steel and other metals	73	23
Building materials	78	24
Textiles, trimmings, etc	68	21
Storage warehousing	65	20
Expressing	66	20
Trucking and delivery	71	22
Brewing	59	18
Oils, greases, etc	53	16
Undertaking	48	15
Laundry	48	15
Electric machinery and apparatus	48	15
Paints and varnish	48	15
Railroad officials	46	14
Drugs and chemicals	38	12
Pianos	47	15
Heating, plumbing and ventilating	35	11
Railroad equipment and supplies	34	10
Grain, hay and feed	35	11
Packing, meats	34	10
Baking	35	11
Paper manufacturing	27	8
Woodworking, etc	27	8
Rugs and carpets	25	7
Flowers	24	7
Roofing	23	7
Liquors	22	7
Mineral waters	18	6
Meat	18	6
Ice	18	6
Hospitals	17	5
Housefurnishing	16	5
Soap and perfume	16	5
Telephone service	17	5
Illuminating companies	15	5
Wagons, carriages, etc	14	4
Boxes and barrels	14	4
Cigars and tobacco	14	4
Importing and exporting	14	4
Milk and dairying	11	3
Milling, flour, etc	11	3

UNCLE SAM TRIES BUSES

A new departure in the collection and distribution of mail was inaugurated in Washington, D. C., this month when the postoffice department put in service three large motor buses, each one capable of carrying ten letter carriers with perfect ease and comfort. The buses, which were manufactured by the Franklin company, are painted a dark blue with the words "United States Mail" in gold lettering on either side. The entrance for the carriers is in the rear.

Postmaster General Hitchcock, who is determined that Washington shall have every facility for the most up-to-date mail service, originated the idea of the use of motor buses. They will be operated 16 hours a day and already have not only demonstrated that they will land the carriers on their routes about 15 minutes earlier than heretofore, but they are ably taking care of collections and delivery in sections of the city where the carriers were handicapped before. The service is operated by David S. Hendrick, the Franklin dealer in Washington, who is under a 4-year contract to supply the post office department with motor buses.

The postmaster general is very well satisfied with the work being done and it is not unlikely that all the postal delivery districts of Washington will eventually be furnished in this manner by motor vehicles.

LOS ANGELES INSTALLS FIRE MOTOR

With the purchase of seven motor-driven vehicles—engines, ladder-trucks and aerial ladder—Los Angeles, Cal., begins the installation of a modern fire-fighting apparatus that will eventually displace the horse in the department. The first try-out of some of these machines took place in October and proved satisfactory, as speed of 50 miles an hour being developed, while hills were surmounted which would have been impossible of ascent by horse-drawn vehicles. The test for steering through the congested district was also a decided success.

The truck shown in the illustration is of an unusual six-wheel construction, the forward part built much on the lines of an ordinary car, while the trailer is joined to this by a swivel. It has a length of 50 feet, weighs 11,200 pounds, and is fitted with solid tires. It was made by the Seagrave shops, Columbus, O.

IMPROVES FIRE ALARM SERVICE

The telegraph alarm division of the Detroit fire department, which has replaced its horses with a 3,000-pound Sampson motor truck, reports a tripling of efficiency in work. This conclusion has been reached after far-reaching tests. On one occasion the motor truck was commissioned to deliver supplies tc all the fire houses in the city. It made the circuit in an 8-hour day. A team of horses required from 2 to 3 days under the old system.

By means of a motor driven winch, wires and cables are drawn through conduits, thereby superseding the slower method of a hand-operated windlass. The vehicle is in service both day and night. Its addition has done away with the necessity of appropriating wagons from other departments to be sent out when emergency are recorded.

SIX-WHEELED LADDER TRUCK FOR LOS ANGELES FIRE DEPARTMENT.

Leading Truck-Selling Problems

One of the Biggest Problems in Selling Motor Trucks Is To Bring the Buyer up to the Modern Standard of the Truck — The Systems of Handling Trucks, Systems of Loading and Unloading, Speed at Which Workmen Labor Are All Problems that Must Be Wrestled With if the Highest Efficiency Is To Be Gained from the Truck—A Twentieth Century Truck Calls for Twentieth Century Workmen and Twentieth Century Methods of Performing the Work—The Big Education Is Needed With the Truck Owners—They Have To Be Taught Efficiency in Labor, and When This Is Done the Net Efficiency of the Truck Will Be Much Higher Than It Is at Present

By Hayden Eames

IT seems to be a habit of the practical mind to try to stretch its own specialty to the solution of every problem it encounters, whether obviously fitted for it or not. For many years this tendency, directly or indirectly, delayed the work of introduction of power wagons more perhaps than any other. Those most interested in the introduction of the power wagon during these years were engineers; very few others were interested at all, and, in consequence, took the engineers' point of view on faith. For a matter of 10 years, hardly a month went by that we were not treated to the information that such and such an engineer had solved the power wagon question, whereas, as far as the engineer was concerned, it already was solved, as there is ample evidence to prove the superiority of the power wagon over all other kinds of road transportation, at least as long as 10 years ago. Whatever improvements the intervening time or the future may have made or will offer, the mere engineering problem could properly be considered to have been solved when the new method afforded superior convenience and economy over then existing methods without corresponding sacrifice.

Searching for Solution

The peculiar mental bias cited in the opening phrase of this article, however, concentrated the attention of those interested upon the search for some engineering solution, and they were correspondingly diverted from any attempt to remove the true impediments to the introduction of the power wagon during that period, which were almost exclusively administrative and psychological, and in a less degree financial. In view of the large number of former inventions which are publicly known to have gone through the same experience, the difficulty of diverting the attention of those interested as well as the public from the engineering question seems amazing when regarded in retrospect.

While the introduction of the power wagon has made some progress during the period named, it is still conservative to say that the surface has not been scratched. Power wagon failures are still being reported by people who are trying to use the new machine in the old way; who, unconsciously, are limiting the capacity of the power wagon by the practices of draft-animal days. The first electric pleasure vehicle I ever saw was supplied with a whip socket, for which the body-maker's only excuse was "Because we had always been in the habit of putting them on."

A recent alleged failure of power wagons reported to me was almost as hopeless of cure as though the owner had insisted on putting oat-bins into his machine shop; in fact, the cause of failure was somewhat analogous. It is this that we have to contend with. It is mainly to overcome this mental attitude, directly or indirectly, that the Electric Vehicle Association of America was created—of course, as a means to another end, but, nevertheless, that is the direction in which its weapons have got to be directed if it is really to be of any service to its projectors. Unfortunately, it is not only going to be necessary to directly educate owners and prospective users of power wagons, but their employes, even to the drivers, who have in most cases got to modify their points of view and methods before the introduction of power wagons can be expected to be general.

Speed of Operation

Like much other labor-saving machinery, especially in the transportation field, the power wagon speeds the men up all along the line. The operators, although much fewer for a given product, have to work harder and faster, but almost invariably obtain their compensation from shorter hours, perhaps not in proportion, but still to an agreeable extent. The increased speed is the first thing the driver feels. It takes him some little time to find his own advantage.

A good illustration lies in a story which was told me by an Adams express agent in Buffalo some 8 or 9 years ago. At that point and at that time the Adams Express Co. had the first really successful installation of electric vehicles. Owing to a poor selection of the size of the vehicles in relation to the routes covered and the service to be done, the station was not as economical as it could have been made, but it was at that time an exceedingly well operated station, and in all probability was at that time, in spite of the above mentioned handicap, delivering express packages more cheaply than it was being done anywhere else in the United States by any means whatsoever.

Converting the Drivers

When the wagons were first introduced, the drivers immediately felt the exactions of the greater speed; they felt themselves speeded up, and they were loud in their denunciations of the whole scheme. They rejoiced in every accident that occurred and took delight in the misfit electrical conditions under which, at first, the vehicles were charged. At the time of which I speak, the whole station had changed. The drivers had discovered that instead of being dragged back from the last package on distant routes at a very slow rate by a tired horse, the electric express wagon now running light brought them back at even a faster rate than that at which it had been running during the day. As one of them said to me: "I can deliver all my packages now and get home 30 minutes sooner than I used to." At that time, the express agent offered to buy a new team with brass-trimmed harness for any one of the electric wagon operators that would drive it, but it was rejected with scorn.

All this education takes time, and hardly anybody is addressing himself to try to bring it about.

Perhaps the commonest of all bad practices is that of applying the power wagon to a delivery route previously operated by a horse wagon of the same size, and limiting it thereto. The difference in the actual cost of operation between a given size of horse wagon and a given size of power wagon is seldom in favor of the latter, and this is true also of the first cost of the complete unit. The principal economical virtue of the power wagon lies in its character of labor-saving machine. Under almost all conditions the price of drivers is the largest single item of expense. Taking the station hands into consideration, the payroll is always the larg-

EDITOR'S NOTE—"Impediments to the General Introduction of Power Wagons" is an article read by Hayden Eames before the Electric Vehicle Association of America second annual convention, New York, October 10, 1911.

est single item of expense of operation. The problem of the successful user of the power wagon then lies in the question of "How much goods can I deliver per man per day?" or "How much work can I do with a man per day?"

It does not seem to take an Isaac Newton to realize that if the work of a man operating the new machine is arbitrarily limited to only what he can do with the old, nothing is gained. In all regular delivery systems, the problem is not only to lay out the routes to fit the new machine, but to select the machine sizes so that the largest possible machine that can be fully loaded will completely empty itself over a selected route in a man's day's work. This extremely simple mathematical thought seems to be almost incomprehensible to the majority of power wagon users. In some express companies, and others, whose principal business is city transportation, certain routes have become a positive institution, and, although usually originally of an entirely arbitrary selection, are assumed to be as immutable as the value of Pi. This sounds like a joke, but it is anything but a joke to those of us who have been frequently called upon to demonstrate the superiority of power wagons over draft animals. Those who have not had the experience will be perfectly surprised at the frequent high-grade of intelligence which declines to rid itself of the inherent necessity of operating on these time-honored routes.

We are, however, occasionally treated to a refreshing case of independence and directness in the substitution of power wagons for horse service.

An Example in Pittsburgh

In the fall of 1901 the Adams express agent in Pittsburgh put in service at East Liberty a light electric express wagon, and in doing so gave instructions to the agent at that point, against the latter's protest, that he should "lay off all four of his horse wagons and do his work with the electric," that he—the Pittsburgh agent—would decide later whether he would allow him any of the horse wagons back or not.

This was certainly taking the bull by the horns, but as the East Liberty agent's job was at stake, the result justified the risk and only one wagon of the four was put back into service, and that only as an extra. Of course, the intention of this barnyard approach could easily have been defeated had the size and speed of the wagon been unsuitable to the particular service to be performed.

A good example of what it means to speed up, not only the operators, but the daily routine and methods, is afforded by the ordinary practices of our great express companies when horses were a rule with them.

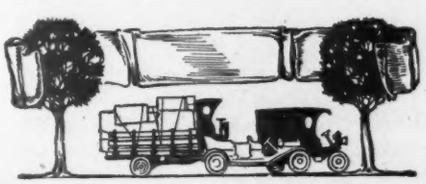
I have before me a careful plotting of ten established routes of different express companies in New York city made in the spring of 1902. You probably will be surprised to discover that from the time the horses left the barn in the morning until they got back at night, the teams were standing still 40.4 per cent of the time, the maximum idleness on any one route being 64.25 per cent, the minimum 27.25 per cent. At least 50 per cent of this is due to the fact that the gait of the man matched gait of the horse. The draft animal belongs to a slow age, and the man who drove him as a rule adapted himself to it.

A Good Comparison

If any one is in doubt as to the reality of this effect, let him observe the Egyptian plowman with his water buffalo. The ordinary plowman is slow enough, but the Egyptian's movements suggest the chameleon. The ordinary draft-animal operator grades up from this on the way to the operators of machines. But the accessory facilities have also been accommodated to the draft-animal, and are, correspondingly, impeding its successor. The methods of loading and unloading and of handling packages, the shipping room arrangements and routine, and even the unnecessary time—assumed to be necessary—even with the existing facilities, are all adapted to the gait set by the horse, and all tend to deprive the machine owner of his advantage; and, remember, these speeds are not set to what the horse can do or necessarily actually does, but what he may do. Long practice has subconsciously led to their adjustment to the uncertainties of the horse in spite of the goad of competition. If you have to allow 30 minutes' leeway in 25 per cent of the cases in which a horse has to make a 2 hours' trip, what is the use of trying to save 15 minutes of ½ hour's loading time?

This, roughly, illustrates the subconscious mental process by which all these measures accommodate themselves to the horse, and may indicate, generally, why they have all got to be changed before the power wagon will be generally acceptable without question. Those who have been through the experience cannot fail to recall the immediate effect of the use of the power wagon toward remedying this condition. The difficulty is to get the first one purchased and properly used.

I have before me a plot of the far-East Brooklyn route of the New York Transfer Co., both with horse service, and with electric vehicles. This involved the operations of what is known as a route-wagon, and no opportunity whatever was afforded at the time to modify the route, or take any other direct advantage of a labor-saving character of the power wagon. During the trip the team stood still 30 per cent of the time, but the power wagon stood perfectly still only 22¼ per cent of the time. The actual difference between the idle periods of the two outputs was three-quarters of an hour, but the power wagon completed the service 1½ hours before the team. Of course this wouldn't do.



The experiment was not made for the purpose of introduction in that instant, but in combination with other available routes, indicated to the demonstrator at once the immense saving that could have been accomplished had the education of the drivers, and the speeding of the package handling, the proper arrangement of shipping rooms, and wagon interiors, to that end, and the reconciliation of wagon capacities and route arrangements been immediately begun. But, perhaps, it is too much to expect that the development of special mechanical facilities for loading and unloading will precede rather than follow the general introduction of the new method.

The reality of the impediment which present handling facilities interposes to the introduction of power wagons can be illustrated by a case I once came across of a high-grade dry goods company in one of our largest cities, whose installation of electric vehicles could not be made to pay. Examination developed the fact that no effort was made to crate or handle the packages in the waiting room with any reference whatever to the respective routes upon which they were to be delivered, and that the routes were laid out with equal disregard to the shortest possible empty haul; following their practice with draft-animals, the wagons were driven to the opening points of the routes, and, extraordinary as it may seem, the packages were all taken out of the wagons, and spread along the beds of grass between the curb and sidewalk. Some of the wagons carried one boy, and some two boys—each with a large canvas bag. Each boy pawed over the pile of packages and selected and put in his bag the packages belonging to the block that he was to cover, and those that were left the driver took back into the wagon and drove to the point at which the boys were respectively expected to finish their bags. Rather than this, the firm should have abolished its entire wagon system and employed boys with bags to carry the packages to the destinations on public trolley cars.

Breaking Old Practices

To the credit of the owners I must say that they finally looked into it, and the difficulty was properly remedied with correspondingly successful result. This was, of course, an extreme case, and unusual in the use of the boys, and the sorting of the packages on the ground; but the shipping room arrangements were by no means unusual. In fact, inadequate loading or unloading facilities are almost universal. The convenience of a ready-loaded crate to slip into the wagon upon

arrival is most uncommon, and such suggestions are almost invariably resisted—not for any reason, but "Because we haven't been accustomed to do so." It sometimes happens in large shops that packages of a certain large classification are of a size and character which admit of their delivery through chutes to the shipping room. It is almost invariably the case that by a slight change in the arrangements, the sorting of these packages according to wagon routes can be made once and for all on the floor where and when they are put in the chutes. But, as far as I know, it has heretofore proved impossible to induce anybody to do this, although I have yet to hear a valid objection offered to it in any case, and yet the delivery manager of such an organization often calls himself a business man, although he unhesitatingly keeps the most expensive unit of his investment standing idle, apparently, for no other object than to relieve the strain on his own ingenuity.

Horse Often Overworked

Many of these requirements could be made to improve the horse service if the horse himself had the endurance to stand it—a point that is frequently overlooked. As has often been said, there is no watt-meter on the horse, and, in consequence, he is generally worked more or less beyond his normal capacity, the loads and routes being more or less subconsciously selected to that end. To save this loading time, therefore, means to cut down the horse's rest, without which he cannot do the work assigned him, but the power wagon needs no rest in the same sense, and it is a large enough investment to make it desirable to conserve this time.

In considering this general question of reducing delays and loading times, it is often overlooked that the day's mileage is a rough measure of the work performed by a unit in a given service. An hour's delay on a 5-ton horse truck, averaging, say, 2½ miles an hour, may be a large percentage of a day's work in that unit, but measured in dollars it represents only a third of the loss represented by a similar period of idleness in a 5-ton power wagon whose average running speed is 7½ miles per hour.

It is very hard to persuade the average user that the idle periods in the day's work in any way affect a comparison of the draft-animal and power wagon.

The reactionary effect of external conditions goes deeper, and is far more nearly universal than the mere lack of facilities in individual establishments. For example:

The dimensions of many of the down-town alleys in Chicago put a definite limit on the truck dimensions that can be used therein, and nearly all trucks working in that part of the city load or unload in the alleys. The peculiar arrangement of the railroad freight yards in Chicago curtail the efficiency of all methods of highway transportation to such a degree as to greatly dwarf the question of their relative advantages. Those who have investigated this particular case closely state that, it is no exception to the rules that the conditions can be perfectly well met by a rearrangement of these yards with direct reference to the use of motor cars with a probable improvement or 150 or 200 per cent in their loading and unloading capacity. It is reported that the railroads themselves are alive to the situation, and are approaching the solution in a more or less dilatory manner with an entire ignorance of the expert knowledge that is available on this subject in the motor car field.

There are many analogous cases throughout the country; many of them can probably be partially met by special portable loading apparatus of one kind or another applied to the trucks themselves. Next to the increase of factor of safety on operating cost to be obtained by improvement in tire maintenance on the heavier trucks, there is perhaps no single field in which the designing engineers, strictly so-called, could play as large a part in developing this business as right in this field of portable loading apparatus and the design of trucks with reference to special service. This is one of the few departments of motor car knowledge in which there is anything yet to be learned from draft-animal practice, or, rather from the practices that existed during the draft-animal period.

Up to date the handling of fresh small fruits at motor car speeds has almost invariably entailed loss, and it is ridiculous to suppose that a little ingenuity properly applied would fail to immediately meet this case to which the improvement in speed and certainty offered by the power wagon gives the fruit handler a most obvious gain.

Nearly all the cotton in the gulf ports, and throughout the south, is handled by negro roustabouts. It is fairly cheap and hard to beat for economy, but it is uncertain and sometimes too slow.

The condition has been partly met by the extension of railroad spurs; but about 2 years ago I knew of a very considerable order for electric 5-ton trucks that was lost because portable jib-cranes could not be applied to them in season to meet the conditions.

More could, of course, be said on this subject, but the examples are sufficiently indicative of the class. In the work of development in this direction, there is still a little to be learned from the practice which prevailed in draft-animal vehicles.

Work of Central Stations

Mechanical ignorance on the part of prospective users, of course, has got to be expected. At least in the electric field no one is in so fine a position to cope with this as the central stations, and many of them are doing yeomen's service in this direction; but we all remember the time when it was otherwise.

The first considerable installation of electric vehicles in this country was almost ruined because the central station manager in that particular instance looked upon the vehicle user as legitimate prey. It was an interesting thing to walk into the charging station at night and see a long row of red-hot cast-iron rheostats through each of which a vehicle battery was being charged in two groups in parallel and to know that the current was being obtained from a 110-volt d.c. circuit which was being metered at the customer's expense nearly three-quarters of a mile away. Even a persistent horse-user cannot fail to sometimes discover something. He may have a nephew "just from college." At all events, this enlightened proceeding caused the user to put in his own gas engine and generator, and, in consequence, cut the monthly cost of current per vehicle from $38 to $5.50.

What a shame!

It is hard to believe today that such a company, or such people, or such action could have belonged to an organization which is probably today doing more far-sighted work in the introduction of power wagons than any association anywhere, and many of whose members were even at that time actively alive to the prospect.

There are Many Handicaps

There are, of course, many minor considerations which tend to retard power wagon introduction, and some of them are of a very isolated character. For example: One user of electric livery wagons in New York still uses many horses, and he probably will as long as there is a sale for high grade coach horses, because he raises them and uses his wagons to break them in. This particular firm needs no instructions from anybody. It is as well informed on the economy of delivery, and as well organized, and as unprejudiced, as any wagon-user we have come in contact with.

Then there is always the reactionary of interested delivery manager. I have in mind a case where electric trucks came to grief very largely, but not entirely, because the man in charge of them received a personal compensation for every horse wagon he was obliged to employ in excess of the electric installation. As a result of this situation an electric truck averaging about 7½ miles an hour round trip by cyclometer, found itself unable to deliver any more goods per day than a horse vehicle of the same capacity averaging 2½ miles per hour round trip by cyclometer. Whenever, as in this case, it looks as though the laws of nature were suspended to the detriment of the power wagon, it is a pretty certain indication that something of this kind is to be looked for. But apart from these minor, but almost universal, considerations which occur in endless variety, the principal obstacles will be found to be practically limited to those discussed more at length in the above paper.

The Motor Car Repair Shop

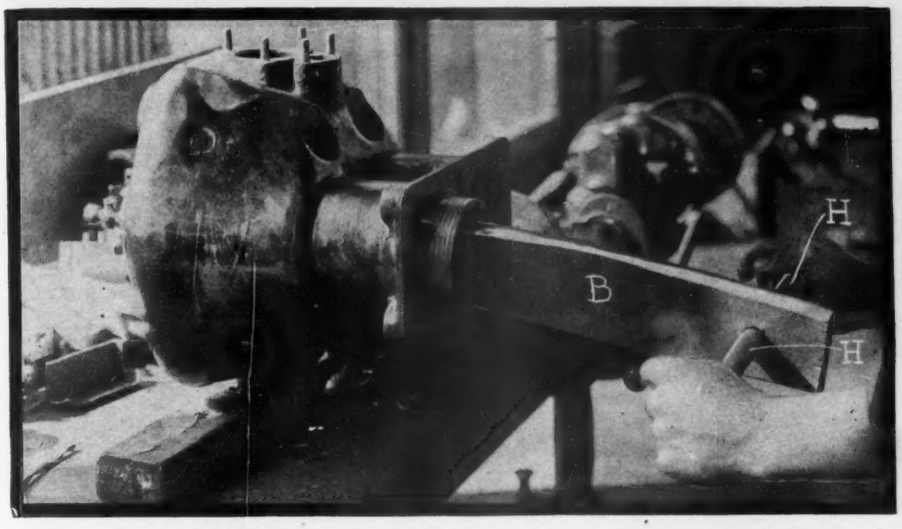


FIG. 1—LAPPING IN PISTONS IN THOMAS REPAIRSHOP, CHICAGO

IN many of the repairshops throughout the country pistons often are fitted into the cylinders of a motor just as they come from the tool of the turning lathe. When fitted in this manner it often is found that in a comparatively short time considerable wear has taken place. The piston will have taken on an excellent finish, but will have been reduced sufficiently in diameter either to cause a piston slap or a sort of knocking noise, or will permit too much oil to work up onto the top of the piston and into the combustion chamber of the motor, so that excessive accumulations of carbon are formed. To prevent this and to insure a more accurately fitting piston, practically all manufacturers and most of the conscientious repairmen, have some means of lapping in a set of pistons. The operation of lapping in a set of pistons consists in grinding them in, so to speak, with oil and some very fine ebrasive such as powdered carborundum, or ground glass. In Fig. 1 is shown the means employed in the repairshop of the Thomas branch, Chicago, for lapping pistons into cylinders. The principal tool used consists simply of a board B with a handle H made at one end by drilling a hole through the board and fitting a piece of broomstick through it. Another hole is drilled in the other end of the board through which the piston pin of the piston is placed to secure the piston thereto. The operation then simply consists in applying the film of carborundum flour and lard oil to the piston and working it back and forth from one end of the cylinder to the other until the piston works therein with comparative ease. Of course, if the piston is too loose to begin with, lapping it will do no good. Pistons to be lapped in must be a fairly tight fit in the cylinder to begin with, and should work with comparative freedom when the job is completed. A thorough cleaning of the pistons is quite necessary after the lapping in operation, so that all traces of carborundum flour are removed from the pores of the iron. The operation of lapping in a set of pistons generally is a very laborious one, but the increased efficiency of service makes it worth while.

Treating a Fierce Clutch

When a leather-faced cone clutch develops a tendency to grab or take hold fiercely, causing the car to jump forward with a bound upon starting, instead of moving off gradually, it is an indication that the leather has become dry and requires a little treatment with castor or neatsfoot oil. The best method of applying these oils is to remove the clutch and immerse it in a basin of the oil, as shown in Fig. 2. This basin is designed specially for the purpose, it being the practice in the repair department of H. Paulman & Co., Chicago agents for Pierce-Arrow cars, to treat all clutches by soaking them in neatsfoot oil, whenever a car comes into the shop for an overhauling.

To keep a leather-faced clutch in good working order, it should be given an application of oil every few weeks. This may be done by throwing out the clutch, then securing the clutch pedal in a manner that will hold it out over night. A block of wood carefully wedged between the front edge of the seat and the depressed clutch pedal will serve to hold the clutch out very nicely where there is no connection between the pedal and emergency brake. When the clutch has been secured in the disengaged position, it should be revolved slowly while a stream of the oil is slowly poured onto the clutch leather and allowed to run down between the leather and the internal friction surface of the flywheel. When the leather has been thoroughly anointed, the oil should be allowed to soak in for several hours.

When a slipping clutch has been neglected to such an extent that the surface of the leather has been burnt and become hard and dry, the leather will not respond to an oil treatment, and the only suitable remedy is to fit a new clutch leather. To do this one should remove the old leather very carefully, so that it can be gotten off intact and used as a pattern for cutting the new leather.

Clutch leather should be cut from the thick part of the hide, and put on rough-side out. In applying the leather one must begin tacking in the rivets at one end and work around the clutch, stretching the leather between each rivet or pair of them. One should be careful to countersink the holes for the rivet heads, so that they sink well below the surface of the leather. After the clutch leather has been applied, it is customary to true the surface up in a lathe, then soaked in oil.

FIG. 2—SOAKING CLUTCH IN NEATSFOOT OIL, H. PAULMAN'S REPAIRSHOP, CHICAGO

From the Four Winds

HOOSIER FARMER IN MORNING AND MOTOR CAR SALESMAN IN AFTERNOON

Louis M. Megee, a farmer in Shelby county, Indiana, has been a motorist for 3 years and in that time he has added to his bank account by selling motor cars as a side line. Megee attends to farm duties in the morning and in the afternoon he visits his neighbors and sells them motor cars. He is agent for the Cole and owns 783 acres of rich Indiana farm land

TACOMA Club Election—At the first regular meeting of the Tacoma Automobile Club of Tacoma, Wash., the following officers were elected for the ensuing year: A. G. Pritchard, president; Ralph B. Smith, vice-president; S. M. Jackson, treasurer, and A. F. Albertson, M. T. Hartson, A. V. Love, C. W. Hansen, Henry Prince and Everett G. Griggs, trustees. The trustees are to elect their own secretary.

Atlanta Stirred Up—The Atlanta Automobile and Accessory Association of Atlanta, Ga., has started two campaigns which should result in the organization of a state association and a dealers' show in Atlanta. A series of meetings has been held with a view of working up interest in the much-needed state association. Committees are now working through the field to find out the prospects for a successful dealers' show. Atlanta has an ideal place for such an exhibition in the Auditorium-Armory, where the first and only southern show under national auspices was held.

Start Jeff Davis Highway—Work on the Jefferson Davis highway, the proposed 300-mile pike road in western Kentucky, which had its foundation in the convention held at Paducah several weeks ago, has begun in earnest. As soon as the civil engineers complete a survey of Livingston county they will work Caldwell, Crittenden, Lyon and Trigg counties. Owing to its already perfect grading McCracken county will be the last on the list. Nothing is in the way to hinder the immediate building of the road and, it is expected, that the highway will be at least half completed within another year. Motorists throughout the western section of the state are deeply interested in the project and, it is believed, that an extension of the highway will be made later.

Atlanta Changing—The movement to do away with horse-drawn vehicles in all the departments of Atlanta's municipal work goes steadily ahead. The latest addition to the Gate City's fleet is a truck for the tapping and construction department of the city water works. The sanitary, hospital, construction, water works, police and fire departments all use motor cars.

Charity That Pays—More than 24,000 rides have been given during the past summer by the Boyer joy-giving car, of Harrisburg, Pa., according to the annual report issued by Charles Boyer, superintendent of the Home Invalids' Union. All classes and nationalities have enjoyed the car, and it is figured that it cost an average of 2 cents for each person. The car was subscribed for by at least 10,000 men, women and children from Sunday schools, bible classes, Christian Endeavor societies, lodges, factories and shops.

Model of Its Kind—A private garage built by A. E. Fleming, of El Paso, Ill., is 24 by 16 feet, cement on metal lath and with a slate roof. The cement floor is painted with cement paint to keep down the dust on the floor. It is lighted by electricity and will be heated by a steam pipe from Mr. Fleming's residence. Lubricating oil is stored in a garret and piped down and drawn from faucets. The gasoline is kept in an 80-gallon tank, which is located 30 feet from the building, from which it is pumped in the garage. The floor drops to the center. The foundation is raised 6 inches above the floor, and floor and foundation all are in one piece. Mr. Fleming has a vulcanizing plant. The cost of the garage was $750.

Des Moines Club Elects—The Hyperion Field and Motor Club of Des Moines elected George Seick, L. E. Stevens and W. E. Moyer directors at a meeting last week. The club is going into the road-making business and will keep two teams at work constantly on the 12 miles of road which lead to the club house from Des Moines. Farmers will assist in the graveling and dragging of the road.

Would Reduce Bridge Toll—At the regular meeting of the board of governors of the Motor Club of Harrisburg, Pa., it was decided to use every reasonable effort to have tolls on the bridges across the Susquehanna river for all pleasure motor vehicles reduced to uniform charge of 5 cents for car and driver and 1 cent for each additional passenger. The present rates are 10 cents for touring car and driver, 5 cents for runabouts and 2 cents for each additional passenger on all cars.

Oregon's Count—On December 1, 1911, there were 6,417 motor vehicles in the state of Oregon, which includes 410 motor cycles, forty electrics, 235 trucks, forty-one delivery wagons, thirty-one taxicabs and 5,660 cars of various kinds registered with the secretary of state. Multonomah county, of course, leads with a registrations of 3,208, just one-half of the total registration in the state. Salem follows with 277 and Medford is third with 243. Registration fees aggregating $27,241.50 has been collected to December 1. On the

basis of the registrations during the current year the registration during the year 1912 probably will not fall short of 9,000.

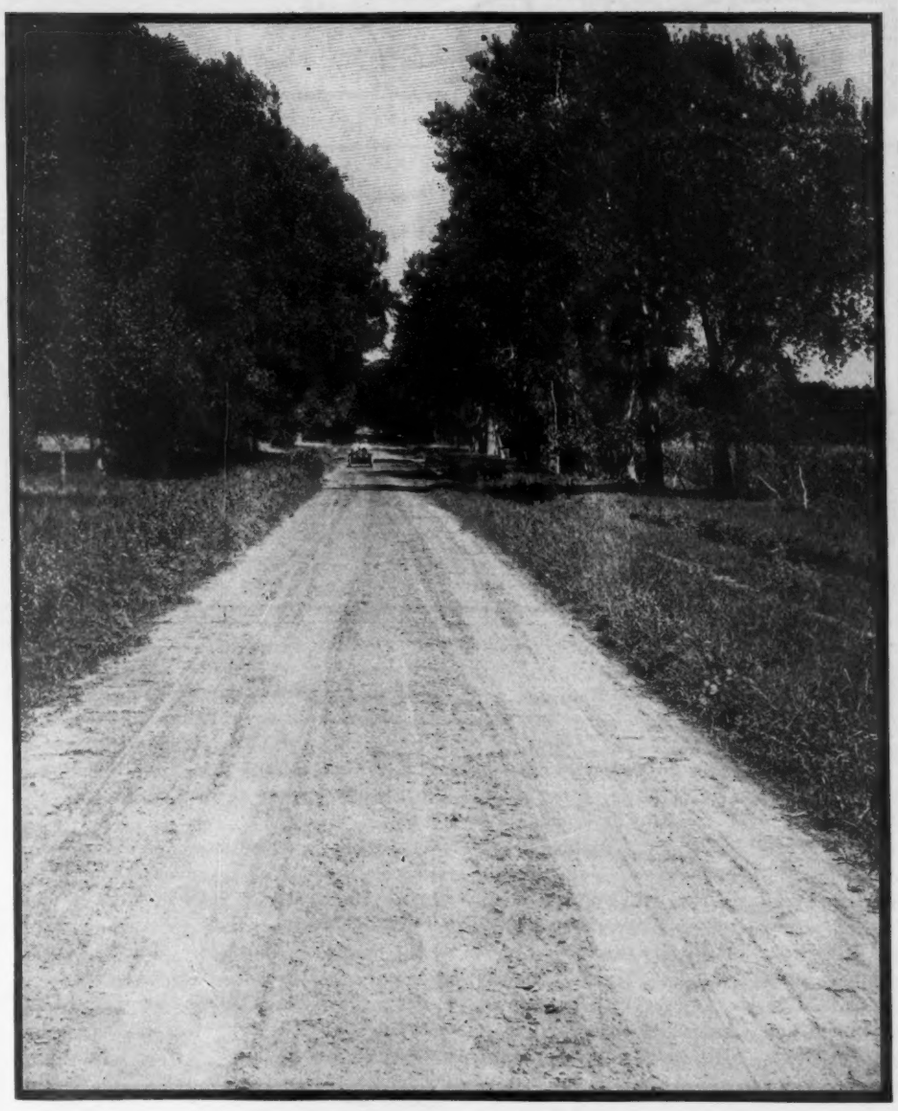
New Paper in Columbus—The Exhaust is the name of a new monthly publication issued by the Columbus Automobile Club of Columbus, Ohio. It is the purpose of issuing the publication about the first of each month. Club news, notes of the good road movement and other matters of interest to motorists generally will be contained in the publication. The publication is to be mailed to every motorist in Franklin county. Allen F. Koch is editor.

Tacoma Club Growing—Eighty-eight Tacoma owners already have affixed their names to the articles of membership of the new Tacoma Automobile Club, and they have set their cap for at least 300 of the 800 owners of Tacoma. Getting behind the good roads movement, promotion of tours and runs, and attraction of the world's attention to Tacoma and the country surrounding it as an ideal place for motoring at its best will occupy the principal interest of the club.

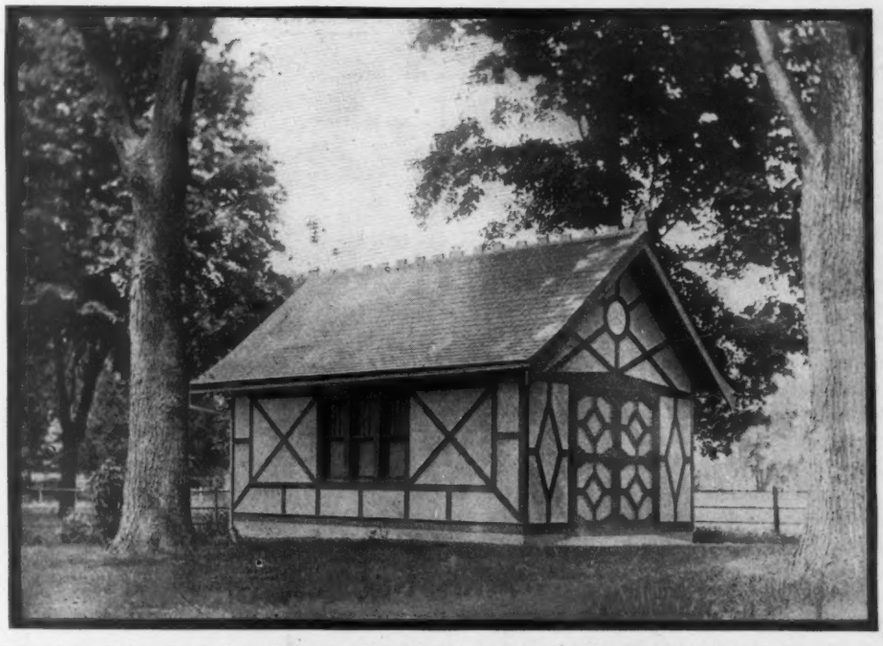
Another Toll Road Gone—Now that all tollgates within the city limits of Baltimore have been abolished the commissioners of Baltimore county are following suit in their territory. The first gate in the county to go was that on Charles street avenue extended, which runs through one of the most fashionable suburban sections adjacent to the city. The gate was removed and the road made free through a deed transferring it to the Baltimore county commissioners.

Helps Taxicab Companies—Judge Osborn in police court recently rendered a decision of considerable interest to taxicab companies and those renting motor cars. The decision was the result of a case brought by a taxicab company against a patron who refused to pay the fair. His attorney held that the law governing the renting of livery rigs did not apply to motor cars, but after several weeks' deliberation the court held that the same rules applies to the hiring of a motor car as the renting of horse vehicles. This ruling which was not carried up to the higher court gives additional protection to taxicab concerns.

Wolverines Discuss Club House—The advisability of erecting a permanent club house and incorporating for $300,000 were two questions discussed at the annual meeting of the Wolverine Automobile Club of Detroit held last week, and while neither proposition carried, the propositions were received with enthusiasm and both will come up again at an early meeting. The annual election of officers developed some keen rivalry and the result was as follows: President, H. J. Porter; Vice-presidents, Charles F. Gilmour and Walter E. Zimmer; secretary, H. H. Newsom; treasurer, E. W. McGookin; directors, W. G. Bryant, W. P. Culver, Charles Grant and H. H. Robinson.



FINE STRETCH ON IOWA'S RIVER-TO-RIVER ROAD WHICH IS A GOOD SAMPLE OF THE HAWKEYE STATE'S DIRT HIGHWAYS



PRIVATE GARAGE, COSTING $750, BUILT BY A. E. FLEMING, AN EL PASO, ILL., MOTORIST FOR HIS OWN USE

Development Briefs

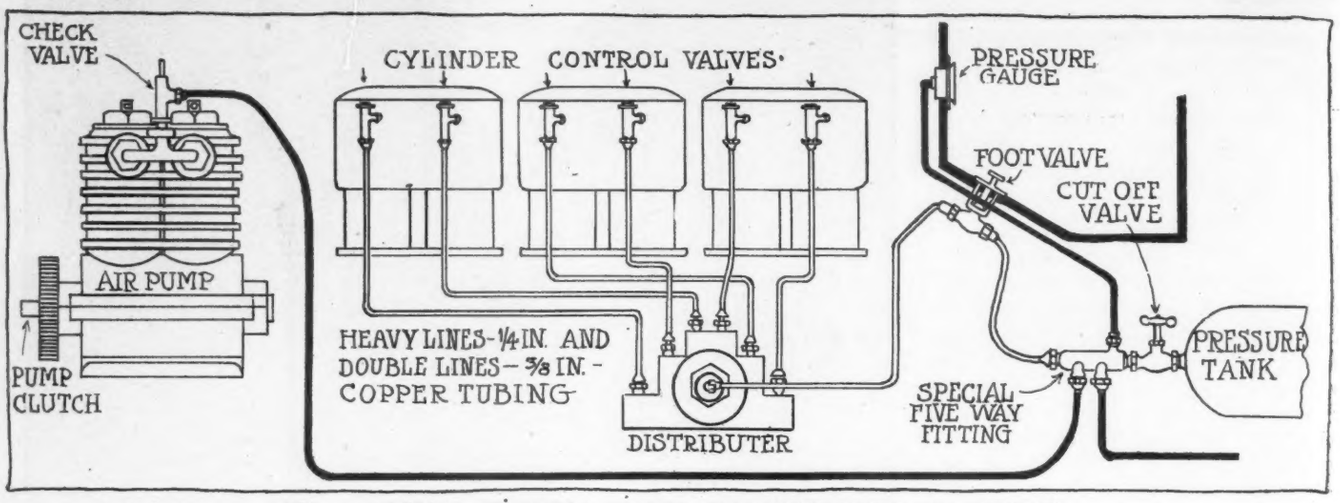


FIG. 1—GENERAL FEATURES OF THE JANNEY-STEINMETZ AIR STARTER

Motor Starter and Tire Inflator

A COMPRESSED air motor starter in which air is stored under pressure by a pump and admitted to the cylinders to give the crankshaft its initial rotation is illustrated in Figs. 1 and 3. It is made by Janney, Steinmetz & Co., Philadelphia, Pa., and is designed in particular for use on six-cylinder motors. The outfit consists of a pump, distributor, a seamless steel air tank, an air or throttle valve, cylinder valves, one for each cylinder, and an air pressure gauge. The pump-distributor unit consists of a two-cylinder pump, with a multiple-port distributor mounted thereon. The distributor rotates continuously with the motor and at camshaft speed, while the pump is thrown into and out of action as required.

The distributor consists of a steel cup-shaped rotor in a bronze body. The rotor runs free of frictional contact with the adjacent surfaces at all times, the pressure of the air, when applied to start the motor, being taken by a ball thrust bearing. For this reason the distributor may be used separately from the pump. For example, it may be mounted on the old battery timer stem, and will operate thereon without bringing a strain on the gears now employed to rotate the timer.

The purpose of the distributor is to automatically shift the incoming air from cylinder to cylinder in the order of firing and to admit it only on the fourth or power stroke. It is obvious that the incoming carburetor mixture is in no way affected. The motor is so designed that the air is used expansively in each cylinder. The pump Fig. 2, has a forged crankshaft, bronze connecting rods and cast iron pistons with three metal rings on each. Splash lubrication is employed, which lubricates the cylinders, the connecting rod and the main bearings. A positive clutch is provided so that the pump may be put into and out of service without stopping the motor. Each cylinder of the pump is a distinct pump itself, and an accident to either does not put the other out of commission.

The pump is light, but of robust construction, and should endure as long as the motor itself. It may be driven by gearing or chain or be direct connected to the motor. Where the pump is used separately, it may be mounted in any convenient place, to be driven by the motor shaft, propellorshaft or transmisison. It is of little moment how fast or how slow the pump runs within limits. An average pump-shaft speed of 150 to 200 revolutions is ample. In operation, air at a pressure of from 80 to 150 pounds is carried in the tank, and in starting an average size motor the drop on the gauge is from 3 to 5 pounds. The pump needs to run, therefore, for but a few seconds to bring the pressure back to where it was, that is—to replace the air used in starting the motor; and this is the only time it is running.

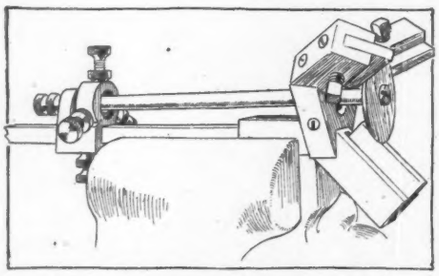


FIG. 2—SARGENT VALVE TRUER

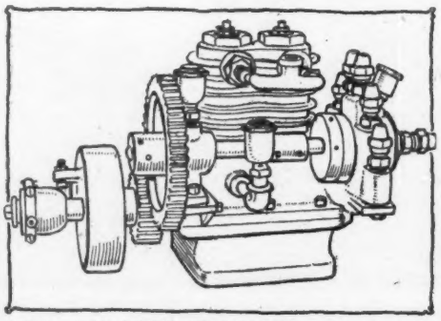


FIG. 3—JANNEY-STEINMETZ AIR PUMP

With this device large motors can be started as easily as smaller ones, as the total pressure on the piston to start the motor increases in the ratio of the piston area. It is obvious that the tires of motor cars can be inflated with air from the tank. Allowance must be made, however, for the pressure necessary to lift the tire-stem valve. Thus 120 pounds may be necessary to get 80 or 90 pounds in the tire. The pump-distributor unit weighs about 18 to 20 pounds. The pump-distributor occupies a space of about 6 by 8 by 10 inches.

Sargent Valve Truer

Valve-grinding is one of the bugbears of the amateur repairman and the small repair shop. It is ordinarily a slow and tedious process, and when completed, though the valves may be tightly seated, the original angle of the valve and its seat is changed with each succeeding operation. A new device for speedily putting worn and pitted poppet valves into good condition has been brought out under the name of the Sargent valve truer. It is marketed by James M. Sargent, Graniteville, Mass., and is illustrated in Fig. 2.

The truer consists of a brass and steel head carrying three adjustable cutters of steel and carborundum cones. The cutting edge of the cutters is serrated to give a gradual and easy cut. They do not cause chatter or gouge marks on the valve surface, and as both edges are finished alike, they may be reversed and their useful life doubled. The proper angle of the cutters is obtained by setting them to a conical 45-degree gauge, not shown. At

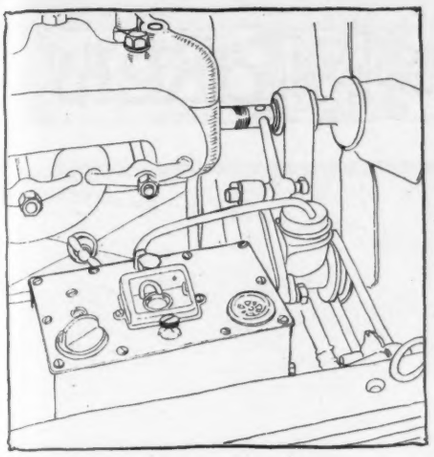


FIG. 4—APCO FORD OILER

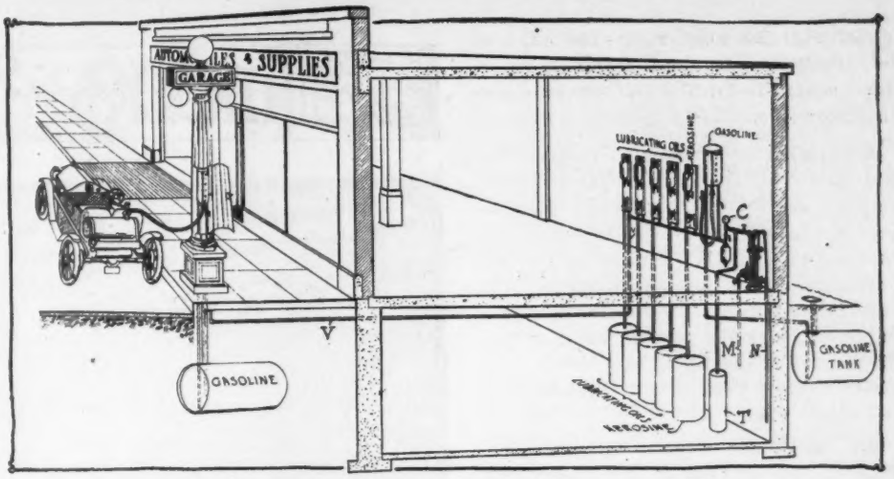


FIG. 5—VAC STORAGE SYTEM FOR PUBLIC GARAGES

the left of the illustration is shown the adjustable sliding gauge by which the valve stem is centered and the depth of the cut is regulated. It is provided with three radial centering screws and a feed screw having a very fine thread for close adjustment.

The operation of truing a valve with this instrument is quite simple. The truer is first clamped in a vise and the valve inserted, the guide being slid up to secure the stem. The stem is centered by means of the radial screws, the feed screw adjusted to the end of the stem and the valve turned by means of a screwdriver in the ordinary way. The valve is removed when a true face is produced, a carborundum cone inserted, the valve again put in the device, this time inside the cone, for polishing. The seat of the valve is ground in the ordinary way, and the new true face of the valve is said to produce a perfect seat very quickly. The truer should prove valuable in allowing owners to utilize crooked valves that ordinarily would require replacement.

Vac Garage Equipment

A particularly neat system of gasoline and oil storage for a public garage is illustrated in Fig. 5. This is the design of the Vac Liquid Equipment Co., Cedar Rapids, Ia. It provides for the storage of lubricating oils, kerosene and gasoline, with both inside and outside discharge; the outside discharge being located in the stem of a boulevard light post on which is placed the garage sign in a position usually visible for blocks. The light post furnishes light for the display window and the garage entrance as well as a street light. Compressed air also may be piped to this station to accommodate transient trade without the obstruction of running cars into the garage.

The system is operated by a hydraulic vacuum pump, the water connections of which are entirely independent of the vacuum line. The same pump also will handle the vacuum steam heating plant. While vacuum steam heating is comparatively new to the public, the vacuum pump system is said to be past the experimental stage. In addition to the oil and gasoline tanks and gauges illustrated, the system embodies the vacuum gauge C, the city water supply M and the vacuum cushion tank T.

Self-Connecting Battery Box

The numerous troubles caused by the loosening of battery connections and terminals have resulted in the appearance of several types of battery boxes in which the separate cells are put in firm electrical connection by the act of putting the units in the box or putting on the lid. The usual objection to these is that a special type of battery is required, which is not always obtainable in an emergency. The H. M. Fisk Mfg. Co., of Watseka, Ill., seems to have met a well-defined need in the production of the Fisk self-connecting steel battery box. As indicated by the name, the box is self-connecting, but the chief feature is the fact that any of the ordinary type of battery terminals can be used by simply unscrewing the binding nuts. The operation of putting on the lid completes the connections. The batteries are protected from rattling and from dirt by the watertight steel box. It is illustrated in Fig. 6.

Oiler for Ford Cars

The Auto Parts Co., Providence, R. I., believes it is better and cheaper to put a little oil in the right place at the right time than to squirt it around promiscuously in larger quantities, and has backed up this belief by producing a special oiling system for installation on Ford model T cars.

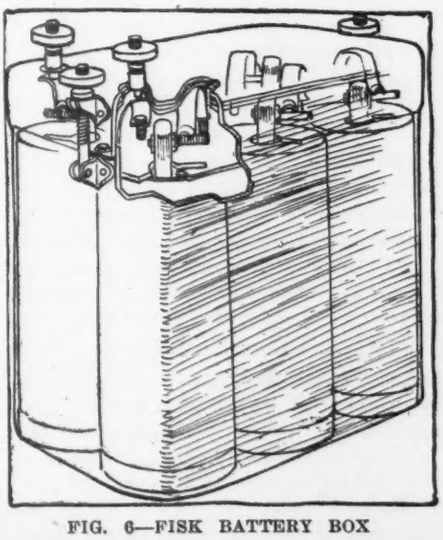


FIG. 6—FISK BATTERY BOX

The system consists of an adjustable sight-feed, mechanical oiler, driven from the camshaft of the model T Ford car, and the makers claim that when once adjusted it will maintain a constant level in the crankcase of this car, entirely eliminating the necessity of putting oil in the breather pipe.

The reservoir holds 2 quarts of oil and it is claimed that the car will travel 350 miles with one refilling of this reservoir. It is illustrated in Fig. 4.

Among the advantages that might be mentioned in connection with this system, is that it is said to eliminate smoke, which is prohibited in most large cities. It also is claimed to do away with carbon, pitted valves and dirty plugs which are all caused by too much oil.

The Apco system uses only 8 inches of tubing and one solderless coupling, the complete outfit can be attached to the car in 1 hour without machine work of any kind.

The oiler mechanism consists of a double plunger valveless pump. One plunger pumps the oil from the reservoir through the sight-feed nozzle, from which it drops in plain sight, and the other plunger takes the oil from the sight-feed chamber under the nozzle and forces it to the engine crankcase through breather pipe. Every increase or decrease in engine speed results in a corresponding change in the amount of oil fed. The reservoir is located at the right side of engine and the oil is fed into the breather pipe through a small hole punched in the screen, and it is made in one casting with brass cover.

Drive is by steel belt from pulley which is fastened to camshaft, this pulley taking the place of the timer brush retaining nut. Oil flow is regulated by turning the button in front of sight-feed: one full turn of the button changes feed from nothing to full capacity. The button is large, easy to handle and permits of the finest adjustment.

SHOULD Be 3,000 Feet—The office of the Warner Mfg. Co. of Toledo covers 4,000 square feet instead of 400 as stated in Motor Age.

Studebaker's November Output—The Studebaker Corporation reports having shipped nearly 500 E-M-F and Flanders cars last month and expects to better that showing this month. A large part of the output went to foreign markets. The corporation has its export business well organized, with the result that it is shipping a full trainload of cars every week either to New York or San Francisco for the export trade.

Big Sternberg Truck—The Sternberg Mfg. Co. of Milwaukee, Wis., last week shipped to Chicago the largest motor truck ever built at its shop in West Allis, Milwaukee county. The truck has a capacity of 8 tons and is equipped with a six-cylinder, 80-horsepower motor manufactured by the Wisconsin Motor Mfg. Co. of Milwaukee. The Sternberg shops are adding men to the payroll daily and shipments are being made as rapidly as the trucks are completed.

Odd Situation at Cranston—At the plant of the Maxwell-Briscoe Motor Co. at Cranston, R. I., the rush of work has been so great that some of the departments were not able to keep up with the others, and as a result about 200 men whose work had put their departments well along were laid off temporarily to allow the other departments to catch up. It is expected the men will resume work again shortly, as the demand for the cars taxes the capacity of the plant.

To Make Engines and Parts—With an authorized capitalization of $20,000, which may be increased to $250,000 when the factory is ready to start January 1, the Empire Gear and Mfg. Co. has been organized and incorporated in Indianapolis. Motors and transmissions and other motor car parts are to be made. Officers of the concern are: Frank S. Clark, president; Charles N. Hurd, vice-president; Howard M. Talbott, secretary; Albert H. Off, treasurer, and Wesley Haufler, general superintendent.

Big Electric Deal—A new era in motor car selling in Milwaukee, Wis., began on December 1 when the Milwaukee Electric Railway and Light Co., one of the largest and strongest public service corporations in the United States, became selling agent for the Rauch & Lang electric cars. The electric company, as the T. M. E. R. & L. Co. is generally known, has as territory the city of Milwaukee, Kenosha, Racine, East Troy, Burlington, Waukesha, Oconomowoc, Watertown and all points reached by its interurban lines, in addition to the contiguous territory. Recently the new management of the electric company established a large private garage for its numerous light and heavy trucks, including gasoline and electric cars used for transportation and repairs. The sales department is at the Public Service building, the $2,000,000 terminal of the traction company, and the show rooms at the T. M. E. R. & L. Co. garage, 451-453 Broadway.

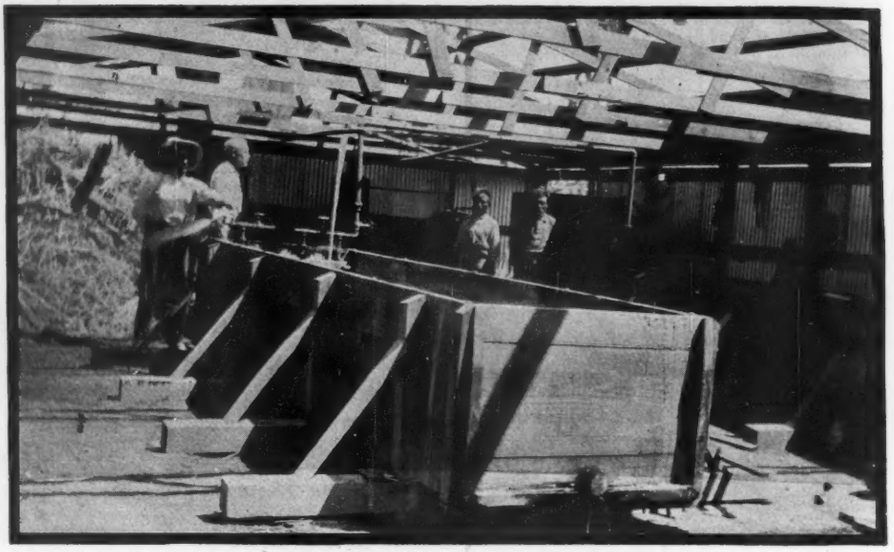
Speedwell Truck Convention—The Speedwell Motor Car Co. of Dayton, O., held a convention Monday and Tuesday which was attended by Speedwell truck dealers from all parts of the country. The idea was to give the dealers an intelligent understanding of truck conditions and ideal truck selling methods.

Hudson Doing Well—Although the Hudson Motor Car Co announced its 1912 model 33 only 3½ months ago, about 48 per cent, or practically one-half the season's output, is already distributed, according to information given out by the sales department. In other words, the Hudson 33 is nearly 1,000 cars ahead of the 1911 sales.

Jump for Gordon—W. J. Gordon, traffic manager of the Anderson Electric Car Co. for the past 9 years, has been advanced to the position of manager of city sales. He will also exercise supervision over all the company's garages. He will have his offices at 697 Woodward avenue.

Concession for Detroit Show—The Detroit Automobile Dealers' Association has secured permission from the city to close one of the streets leading to the Wayne pavilion, where the 1912 show is to be held, and will erect a temporary annex, 108 feet wide by 165 feet long, which will add 17,820 square feet to the floor space, bringing the total to over 50,000. This will enable the association to accomodate many manufacturers of motor cars, in-

Among the Makers



INTERIOR VIEW OF A CANDELILLA WAX FACTORY

Mexico Contributes to Motor Industry

ANOTHER semi-desert plant that grows in great profusion in many localities of the semi-arid region of the upper Rio Grande border of Texas as well as in a considerable scope of country in northern Mexico is being made the source of a large and profitable industry. Experiments that were conducted with the view of discovering the possible valuable ingredients of the candelilla plant resulted in proving that it contains a wax substance which, under the methods that have been adopted, may be extracted with comparative ease. There have been established in Mexico several plants for the manufacture of wax out of the weed, and it is stated that the output of these factories now aggregates about 11 tons of wax per month, which sells at prices ranging from $600 to $900 gold per ton. The cost of producing the product, including transportation of the weed to the factory and other expenses, is about $200 per ton.

Tests have shown that this wax may be used successfully in place of rubber for electrical insulation. Experiments by electrical and other concerns have satisfactorily proved this fact. In San Antonio a cable was insulated with candelilla wax, another with rubber of the best quality, then laid in the ground for 6 months, after which they were taken up and the wax insulation was found to be perfect while the rubber had oxidized and was beginning to rot.

That which is now being marketed is

and Dealers

CANDELILLA WEED AT THE FACTORY

Candelilla Wax Is Used for Insulation

used chiefly for electrical insulation and in the manufacture of phonograph records, wood and leather polishes, floor wax, varnishes, pharmaceutical articles, candles and rubber compounds.

It requires on an average 30 tons of the plant to produce 1 ton of wax, and the cost of cutting, hauling and treating 1 ton of the raw product is about $2.75. A safe calculation would be that there are at least 2,000,000 tons of the candelilla plant in Texas, accessible to factory locations, which would mean an annual revenue of more than $20,000,000 if all were cut down and manufactured into wax each year. The weed reproduces itself yearly when cut off at its roots. It contains from 3 to 5 per cent in wax. The bagasse, or refuse, after the product has been extracted, is used for fuel in the factories, thereby minimizing that feature of cost of production. The process of manufacture is as a rule boiling and steaming. This makes a crude wax which is subsequently refined. One process used is to add a small quantity of sulphuric acid when the weed is boiled and steamed in the water. This process has the advantage that the wax is extracted at once as a refined product and is of a very light color and brings a higher price. It is most economical and extracts all the wax in the plant. Another process which is used is that of submitting the plant to the action of napththa, which dissolves the wax, and subsequent distillation.

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cluding both pleasure and commercial vehicles, and accessories who have applied for space.

Newmark Changes—J. H. Newmark, who has been advertising manager for the Oakland Motor Car Co., of Pontiac, for the past 3 years, has been transferred to the advertising division of the General Motors Co.

Louisville Lists a Show—The fifth annual exhibition of the Louisville Automobile Dealers' Association will be held February 21, 22, 23 and 24 in the First Regiment armory, which covers more floor space, it is said, than any other building in the south. The 1912 show is scheduled a month earlier than it was held last year. The committees in charge of the exhibition in 1911 did their work so well that they have again been chosen to make arrangements for the coming show and look after all the details connected with the displays.

Krit's Foreign Business—Lawrence Moore, general manager of the Krit Motor Car Co., has just returned from Europe, where he received several large contracts. The company is preparing to ship 100 Krits to its British agents within the next few days, and the indications are for a continuance of these foreign shipments throughout the season.

Girls as Show Boosters—If the coming Toledo show is not a huge success it will not be due to lethargy on the part of the fair sex connected with the trade. A club to be known as the T. A. D. A. Booster Girls has been organized by about twenty-five of the girls who are employed in the motor sales rooms of the city. For the purpose of advertising the show badges and arm bands will be worn, and one evening of each week they will visit a public gathering and boost the show.

Busy in Detroit—Some of the Detroit factories have been so busy turning out cars that the managements have found it necessary to defer the taking of inventory. It is understood that a few are planning to shut down around the holidays for this purpose.

Does Not Disturb Miles—The addition of A. F. Mais to the Studebaker staff in no way conflicts with E. J. Miles, consulting engineer, who is in charge of the experimental department. Mr. Mais has duties in a department separate altogether from the experimental department proper and in no way does he clash with Mr. Miles.

Colby Control Changes—The controlling interest of the Colby Motor Co. of Mason City, Ia., has changed hands. New officers have been elected as follows: President, J. E. Burmeister; vice-president, W. M. Colby; treasurer, H. S. Murphy; secretary, W. N. Smith; general manager, D. W. Henry. Under the new management it is expected that the output of the factory will be increased, and that the line of trucks will rapidly be completed.

A Chevrolet Rumor—The fact that the recently-organized Chevrolet Motor Co. has filed amended articles of association increasing its capital stock from $100,000 to $2,500,000 has given rise to a rumor that the company is preparing to absorb other concerns. Officers of the company deny this, however, saying that the increase means simply that the company will carry on its manufacturing operations on a larger scale than was at first contemplated.

Packard Outlook—The Packard Motor Car Co. reports that orders for spring delivery have broken all records for this time of year. More specifications were received the past week than in any other week since July 1, and with the end of the 1912 season, still 6 months away, the Packard sales for the season to date, according to the sales department, equal the entire output for the season of 1911. The original line of inclosed bodies for this season is practically closed out and a supplementary factory order is now coming through. The increase in sales is credited largely to the appearance of the new Packard six. The company is selling three sixes to one 30. Officers of the company believe that the early estimate of a $15,000,000 output in pleasure cars will be exceeded. Sales of Packard trucks for the calendar year 1911 will about double the 1910 output. The new truck plant will be ready for operation about the first of the year. This will treble the capacity of the truck department. The indications are that the Packard plant will be operated at its normal capacity throughout the winter.

Brief Business Announcements

SAN DIEGO, CAL.—The U. S. Grant hotel garage has taken the agency for the National.

York, Pa.—J. P. Ogden, 31 West Philadelphia street, will handle the Oldsmobile car in York and vicinity during 1912.

St. Cloud, Wis.—The Peter Entringer Co. has completed a garage 40 by 80 feet and taken the agencies for the Krit and Nyberg.

Idaho Falls, Idaho—The garage firm of Clay & Murphy has been dissolved, J. C. Clay buying the interests of L. B. Murphy. There are 100 cars owned in the town.

Lincoln, Neb.—H. E. Mason, formerly with the Shamp Implement Co., has purchased an interest in the Sidles Motor Co., and has succeeded G. E. Swope as manager.

Chicago—The Velie Motor Vehicle Co.'s Chicago branch has closed a contract for the sale of Velie pleasure and commercial cars with the Columbia garage, 335 West Madison street, Chicago.

Montreal — The Kissel Car Sales Co., Limited, is among the latest applicants for charter privilege to do business in Canada. It has received authority to use $40,000 capital, with head office in Toronto.

Philadelphia, Pa. — The Halladay has opened an eastern distributing sales agency at the southeast corner of Fifteenth and Oxford streets. The Halladay sales agency's territory will comprise Pennsylvania, New Jersey, Delaware and Maryland.

Cleveland, O.—F. E. VanPatton has been selected as the manager of the new branch of the Ford Motor Co., which has just been established in Louisville. Before coming to this city Mr. Van Patton was assistant manager of the Cleveland branch of the Ford Motor Co.

Milwaukee, Wis.—The Wisconsin Auto Sales Co., Milwaukee, Wis., state agent for the National, Herreshoff, Westcott and Cutting, has been incorporated under the laws of Wisconsin for $20,000 by George P. Hewitt, formerly manager of the Wisconsin Buick interests and R. L. Anderson.

New York — Following the recent establishment of new quarters in Chicago and the establishment of a branch in Kansas City, the old place in San Francisco has had to be abandoned by Splitdorf, owing to the lack of proper facilities for handling the volume of business, and P. E. Kempton, C. F. Splitdorf's branch manager on the coast, will now be located at his new headquarters, 430-36 Van Ness avenue.

York, Pa.—Miller & Williams, Los Angeles, Cal., have taken the agency for the 1912 line of Pullman cars.

Montreal Ont.—The International Car Agency Co., 855 St. Catherine street, west, has been appointed local agent for the Inter-State car.

Des Moines, Ia.—Grover Hubbell this week let the contract for a $12,000 two-story brick garage building at Twelfth and Locust streets.

Seattle, Wash.—The Motor Distributing Co. hereafter will handle the Lozier cars in this city, with T. A. Davies, president and treasurer, and T. G. Young, secretary and manager.

Washington, D. C.—C. Cassard Schroth, agent for the Stearns, has taken quarters with the Wilson Co., 918 Fourteenth street, N. W. The latter handles the Cole and Krit.

Washington, D. C.—The Overland-Washington Motor Co. has been appointed agent for the Garford line of pleasure cars and trucks. Considerable territory in Virginia and Maryland has been given the new agency.

Syracuse, N. Y.—R. W. Sherman has resigned from the publicity department of the Franklin Automobile Co., and will devote his time to special writing in connection with motor publications and newspapers.

Cincinnati, O.—The following agencies have been closed for the Union 25: Crowe Motor Car Co., Minneapolis, Minn.; Marx Brothers, Milwaukee, Wis.; McNabb Garage, Newport, Tenn.

Toronto, Ont.—The Wolseley Tool and Motor Car Co., Limited, has opened a Canadian branch in Toronto, Ont., and at present is occupying a temporary office at 49 Wellington, east, pending the erection of its new garage and salesrooms at 81 Avenue road.

Cincinnati, O.—H. E. Taylor has resigned his position with the Automobile Supply Co. of Chicago, and has joined the sales force of the Olds-Oakland Motor Co. He will have charge of the local retail sales of Oldsmobile, Oakland and R. C. H. cars.

Boston, Mass.—The Matheson company has secured the new building erected for the Alco and Stoddard-Dayton on Commonwealth avenue recently, and which was vacated when those two makes were changed from agencies to branches. The company has been changed from an agency to a branch, and Roy Faye, who had the agency for the car in New England, has gone with the new company to head the sales force.

Depere, Wis.—The Depere Motor Car Co. has been appointed district agent for the American Motors Co. of Indianapolis.

Clinton, Ont.—The Clinton Motor Car Co., Limited, is the title of a newly incorporated company at Clinton, Ont., with a share capital of $100,000.

Toronto, Ont.—The Cutting Motor Sales Co. of Canada, 76 Adelaide street, has been appointed wholesale distributor for Canada of the Cutting car.

Philadelphia, Pa.—The Lee Tire and Rubber Co., of Conshohocken, will, after extensive alterations are completed, open a Philadelphia branch at 225 North Broad street.

Ottawa, Canada—Pink, McVeity & Blackburn, dealers in Franklin cars, whose garage was burned recently, expect to occupy a new fireproof salesroom and garage on January 1, work on which is being rapidly pushed.

York, Pa.—The 1912 line of Klinekars will be handled by the following agents: Kline Kar Motor Co., Pittsburgh; Scottdale Auto Co., Scottdale, Pa.; Kline Kar Motor Co., Rochester, N. Y.; Foster Motor Car Co., Richmond.

Tacoma, Wash.—W. C. Baldwin, recently appointed manager of the Tacoma branch of the Ford Motor Co., announced the past week plans for a two-story brick and concrete garage 50 by 130 feet, which will be completed during the next 6 weeks at Division avenue and K street.

Indianapolis, Ind.—F. H. Quick, formerly with the Gibson Auto Co. of Indianapolis, Ind., and United Motors Indianapolis Co., has joined the sales force of the Findeisen & Kropf Mfg. Co., manufacturer of Rayfield carbureters. Mr. Quick's field will be with the car manufacturers.

Burlington, Wis.—Raymond C. Agner, inventor of an oil and grease gun and other motor car specialties, tools, etc., has just been granted patents on an adjustable spark plug wrench, to be marketed under the trade mark of Simplex. It will be manufactured by Mr. Agner's company at Burlington.

Baltimore, Md.—Announcement has been made by A. Maurice Eastwick and Robert F. Kaehler that the partnership of the local branch of the Ford Auto Co., handling the Ford cars in Maryland and Virginia, has been dissolved. Mr. Eastwick will continue in charge of the local agency, which also will include the state of Maryland, while Kaehler will remain

in charge of the Ford Auto Co. in Richmond, Va., as agent for the Ford car in that city and the remainder of Virginia.

Sunnyside, Wash.—A. C. Weber, manager of the Sunnyside garage, now has the agency for the Flanders and E-M-F cars.

Auburn, N. Y.—George H. Leonard has secured the contract to represent the Franklin in this territory under the supervision of the Syracuse branch of the Franklin Automobile Co.

Sheboygan, Wis.—A. H. Prange has been appointed agent for the Ford for the east half of Sheboygan county and will establish a garage and salesroom on North Seventh street and Jefferson avenue.

Spokane, Wash.—The Mitchell motor car has found a home with the Metropolitan Motor Car Co. Manager Harry Bell recently announced the relinquishment of the Marion and the acquisition of the Mitchell.

Atlanta, Ga.—The southern branch of the White Co. has followed the trend of the times and opened a show room on Peachtree street. The present garage and machine shop on Marietta street will be used as before.

Toledo, O.—The Toledo Auto Delivery Co. has been incorporated with a capital stock of $10,000, to do a general delivery business with motor cars. The incorporators are Charles K. Friedman, Morris Tobias and Joseph Alexander.

Washington, D. C.—E. C. Bull has resigned as manager of the Pope Automobile Co., agent for the Pope-Hartford and Marathon, to accept a position with the New York branch of the Lozier Motor Co. He has been succeeded by H. N. Dewitt.

Syracuse, N. Y.—George E. Messer has resigned his position as manager of the Syracuse branch of the Franklin Automobile Co. to accept a position as western sales manager for the J. W. Bird Co. of Boston, Mass., manufacturer of paper.

Akron, O.—The B. F. Goodrich Co. has completed the installation of three new additional branches in California—one at Fresno, in charge of R. W. Peters; one at Oakland, in charge of H. S. Smith and one at Sacramento, in charge of H. W. Schoenlaub.

Boston, Mass.—C. H. Perkins is the latest addition to the salesforce of the New England branch of the Lozier. Manager Gormley has added a second-hand department to the branch with headquarters at 34 Cambria street and he has placed it in charge of F. R. Parker.

New York—The Gallagher-Tompkins Co. of 1876 Broadway is the newly appointed metropolitan agent for the Selden Motor Vehicle Co. The Selden company also has opened a new salesroom at 119 East avenue, Rochester. This is a branch of the factory used for sales purposes only, as the repair department is still maintained at the factory. W. C. Barry, Jr., is in charge. G. A. Blanchard of Portland, Me., has been appointed the new Selden agent in Portland.

Toledo, O.—The agency for the Warren-Detroit line of cars in northwestern Ohio has been taken by the Grasser Motor Co.

Washington, D. C.—Emerson & Orme, 1407 H street, N. W., have added the Fiat to their line, which consists of the Apperson and Detroit electric.

Oshkosh, Wis.—The Dorman Motor Car Co. is opening a new 40 by 120-foot two-story garage in this city and has contracted to handle the Locomobile, Haynes and Hudson cars in this territory.

Des Moines, Ia.—The Capital City Garage Co., Des Moines agent for the Jackson, has taken uptown quarters. This company has represented the Jackson here for several years but has always conducted the business from its factory.

Portland, Ore.—F. W. Vogler, president of the Northwest Auto Co., will devote his entire time and energy to the wholesale end of the Reo and Apperson lines in the northwest. The Portland agency for those cars has been taken over by C. L. Boss & Co. The new firm has secured a 5-year lease on the property at Trinity place and Washington street between Nineteenth and Twentieth.

San Francisco, Cal.—The latest to be represented in San Francisco is the Jackson, the agency for which has been secured by Southworth & Kline.

Los Angeles, Cal.—The Studebaker southern California branch is established in its new home at 1620 to 24 East Seventh street. Joe Ollier is manager.

New York—Grant L. Egan has resigned as advertising manager of the Motor Car Equipment Co. of New York city, and will hereafter give his attention to general advertising as the Catalog Publishing Co.

Seattle, Wash.—Fred Howe, formerly manager of J. W. Leavitt & Co. in Seattle, has taken the same position with this company at Portland, and Robert A. Atkinson, formerly sales manager of the Seattle branch, has been appointed manager.

Chicago—F. W. Grubb of the Fulton & Grubb Co., manufacturers' agents, has severed his active connection with that company to accept the position of manager for the Excelsior General Supplies Co., 1436-1438 Michigan avenue. Mr. Grubb retains his financial holding in the Fulton & Grubb Co.

Baltimore, Md.—In order to have more room for the increasing business the Mar-Del Mobile Co., Packard representatives, will close its garage skating rink on January 6 and utilize the rink space for storage purposes until its addition is completed. When this addition is finished the rink space will then be converted into a shop for painting and upholstering cars.

Detroit, Mich.—George Main, formerly assistant traffic manager at the Chalmers plant, has been appointed traffic manager at the Metzger company's plant. P. S. Beamer, who has been associated with President Everitt for a long period in the Metzger plant, has just been made general auditor of that company and will have entire charge of all accounting and similar work.

Milwaukee, Wis.—C. A. Hamilton, for 6 years vice-president and manager of the Wisconsin Engine Co. of Corliss, Racine county, Wis., has resigned to become associated with the Lavigne Gear Co. of Milwaukee, a reorganization of the Lavigne Gear Co. of Detroit, which recently established a plant at Corliss to manufacture steering gears and has general offices at Milwaukee.

Janesville, Wis.—George H. Smith, 302 Lawrence street, has been granted letters patent on a device to lower and raise motor car canopies and tops. By means of the Smith device one man can raise or lower a top without assistance. The roller and bar device is invisible when the top is up or when down and covered with an envelope. Mr. Smith intends to manufacture it at Janesville.

Recent Incorporations

New York—Parker Motor Wagon Co., capital stock $10,000; to deal in and manufacture motor vehicles; incorporators Harry C. Cottfried, Drew McKenna and Charles E. Wood.

New York—Mooers Automobile Co., capital stock $10,000; to deal in and manufacture motor vehicles; incorporators E. J. Bosse, G. Leveene and L. A. Weinstein.

New York—Cosmopolitan Motor Co., capital stock $10,000; to conduct garages; incorporators John Devine, John J. Kirby and A. J. Armento.

Wilmington, Del.—Motor Starting Co., capital stock $1,000,000; incorporators L. E. Wales, L. E. Replogle and L. W. Cooper.

Camden, N. J.—Penn Motor Car Co., capital stock $500,000; to manufacture, buy and sell motor cars; incorporators V. A. Murray, L. A. Myers and D. Bellinger.

Augusta, Me.—B. F. Moffat Punctureless Tire Co., capital stock $2,500,000; to manufacture motor vehicles; incorporator E. M. Leavitt.

Chicago—Advance Motor Specialties Co., capital stock $10,000; to manufacture motor car supplies; incorporators George Heidman, N. A. Street and L. E. Street.

Indianapolis, Ind.—American Electric Co., capital stock $10,000; to manufacture motors and generators; directors R. A. Love, Robert Steven, P. G. Winter.

Sayre, Tex.—Automatic Motor Plow Co., capital stock $200,000; incorporators J. A. Hullum, S. P. Rogers, H. F. Carmichael and John Y. James.

Wilkinsburg, Pa.—Miles Motor Tire Spring Co., capital stock $200,000; to manufacture tire spring wheels.

Rochester, N. Y.—Turk and Brown, capital stock $10,000; incorporators Sophie H. Brown, Alfred H. Brown and John F. Turk.

Detroit, Mich.—Briggs-Detroiter Co., capital stock $200,000; incorporators Claude S. Briggs, E. D. Moesner and John A. Boyle.

Boston, Mass.—Morsa McDonald Co., incorporators John D. McDonald, John S. Moore and James H. Mathews.

Janesville, Wis.—Janesville Motor Co., capital stock $20,000; incorporators George M. Decker, Albert Schaller and Leslie Davis.

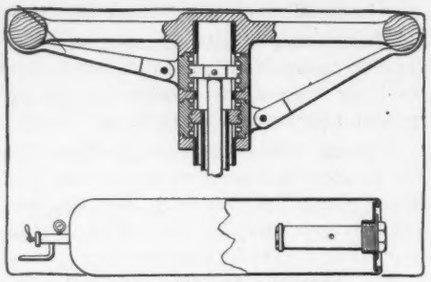
Brooklyn, N. Y.—Prudence Motor Truck Co., capital stock $100,000; incorporators Herbert Cooper, Arthur Cooper, A. G. Yeomans, C. J. Diegert and F. G. Haven.

Nashville, Tenn.—Auto and Livery Co., capital stock $3,000; incorporators L. W. Jacobs, W. F. Jacobs, E. L. Holt, T. Allison and Harry A. Stokes.

Louisville, Ky.—Transit Motor Car Co., capital stock $20,000; president E. C. Walker.

Current Motor Car Patents

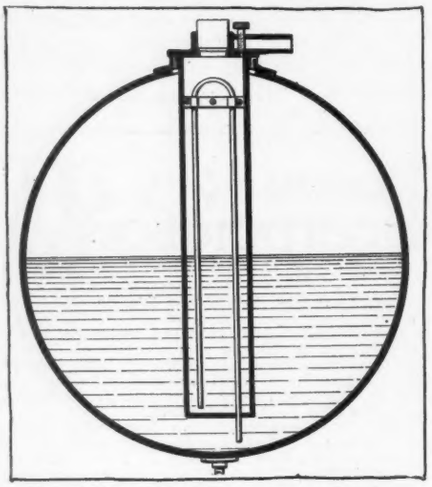
NEW Engine Control Mechanism—No. 1,010,082, dated November 28; to Gustavus F. Smith, New Berlin, Oo.—As shown herewith, this patent pertains to a steering mechanism for motor vehicles including a rotatable hollow steering shank with a wheel thereon having longitudinal slots in its walls, an endwise movable shank in the steering shank having a cross head with sprockets protruding through the slots, an endwise-stopped rotatable sleeve around the steering shank having an internal screw thread meshing with the sprockets, and an arm extended from the sleeve having a handle slidably fitting one side of the rim of the steering wheel.



SMITH ENGINE CONTROL
JENKINS ACETYLENE GENERATOR

Jenkins Acetylene Generator — No. 1,010,266, dated November 28; to Charles Francis Jenkins, Washington, D. C.—This patent relates to a combination with a gas storage tank having a suitable threaded opening, a tubular water-holding generator projecting inward through the opening and having its outer end portion in threaded engagement in the opening, a foramenous wall dividing the generator transversely and forming in one end thereof a carbide compartment, an open tube passing outward through the wall of the body of the generator from a point in the axial portion of its interior, the apparatus being provided with a vent passage leading outward from the interior of the tank and having its outer end in position to be closed by screwing home the generator and opened by partially unscrewing it.

Schulz Carbureter—No. 1,010,184, dated November 28; to Carl F. Schulz, Brooklyn, N. Y.—The carbureter to which this patent relates is shown in section herewith. It embodies a fuel inlet valve and is provided with an air inlet opening and a mixture outlet opening, an air admission valve arranged to admit air from the air inlet opening into the carbureter whereby it may pass to the mixture outlet opening, the valve being movable by suction toward the open position, and a pressure controlling means arranged to balance the pressure of the suction on opposite sides of the valve at predetermined positions thereof.

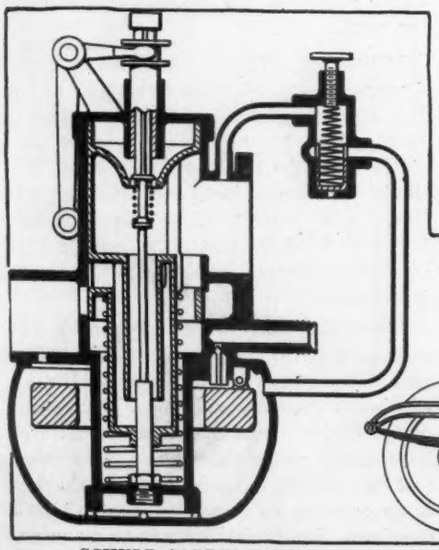


MARSH LUBRICATING ATTACHMENT

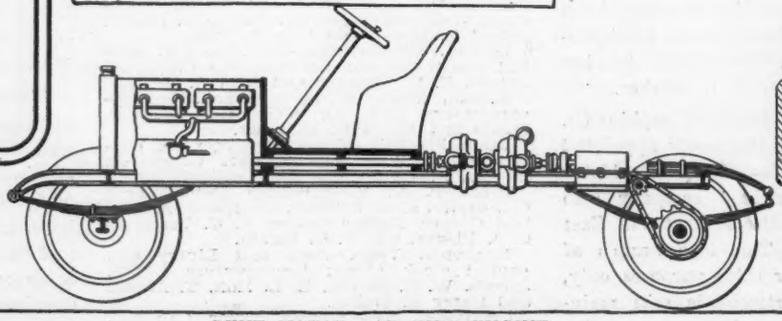
Marsh Tank Lubricating Attachment—No. 1,010,288, dated November 28; to George W. Marsh, Oakland, Cal.—This patent covers a device for adding lubricating oil to the fuel supply which comes from the fuel supply tank. It comprises a gasoline tank having a discharge pipe in its bottom and an opening in its top, a removable cap closing the opening and having a vertical supply passageway, a stopper closing the passageway, an oil tank having its upper end secured to the cap and suspended within the gasoline tank with its lower end adjacent to the mouth of the discharge pipe, and a syphon mounted in the oil tank having the end of its long leg projecting to the bottom of the lubricating tank into the gasoline tank and located adjacent to the mouth of the discharge pipe.

Lent Motor Car Fire Engine—No. 1,010,158, dated November 28; to Leon B. Lent, Brewster, N. Y.—This patent applies to a motor car fire engine having in combination with a frame and supporting wheels, a motor mounted on the front end of the frame, a main shaft driven by the motor and extending longitudinally of the frame, transmission mechanism between the shaft and the wheels and a rotary pump whose impellor is permanently mounted on the shaft, this impeller constituting a flywheel for the motor and the shaft comprising both a pumpshaft and a vehicle propeller-shaft. The arrangement is shown in the center illustration at bottom of page.

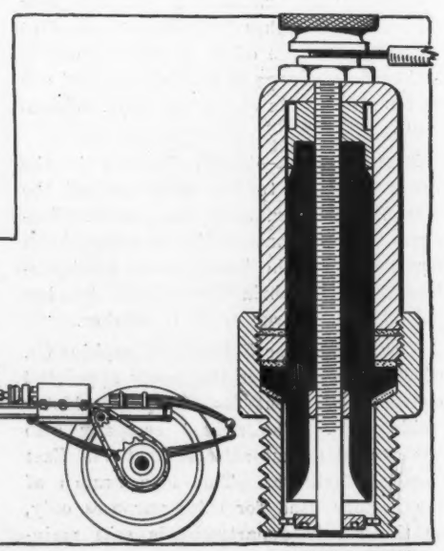
Terry Spark Plug—No. 1,009,867, dated November 28; to George Orvill Terry, Minneapolis, Minn.—This patent relates to a spark plug comprising a shell having an annular groove formed at one end thereof, an electrode in the form of a split ring arranged in the groove, with the inner face of the ring projecting beyond the edges of the groove, a longitudinally adjustable disk mounted in the shell and of less diameter than the annular electrode secured therein, the disk having a peripheral groove, and an opposing electrode in the form of a split ring mounted in the groove of the disk with its periphery projecting beyond the edges of the groove and spaced from the first mentioned electrode.



SCHULZ CARBURETER



LENT MOTOR CAR FIRE ENGINE



TERRY PLUG